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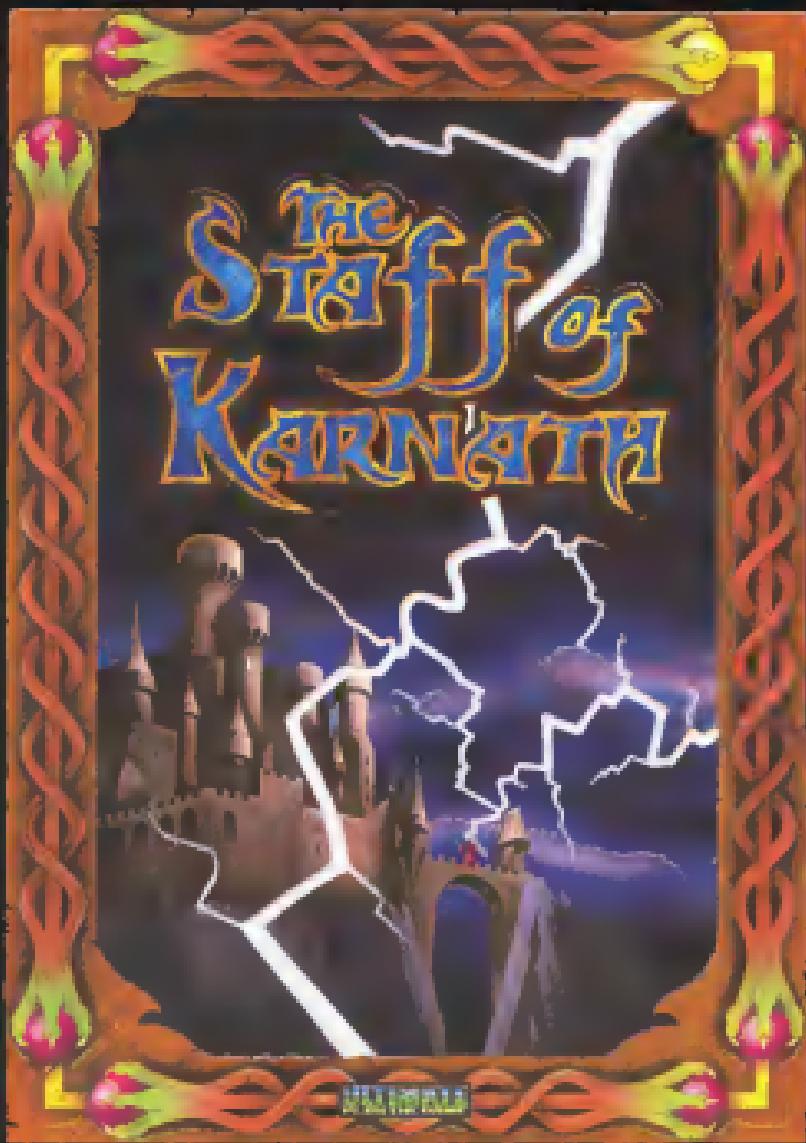
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ABC

Submitting articles

Commodore Horizons welcomes reader contributions — other articles or program listings. Articles should be typed double-spaced with a wide margin. Programs should, whenever possible, be printed out on plain white paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted, so please keep a copy. If you would like your programs returned you must include a s.a.e.

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check

It's in the stage, so it's not rounder

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Editorial

IS COMMODORE'S software an emperor, lion or佛? Certainly the company has the world's best manufacturing set up for home computers. In terms of sales, customer support and availability of peripherals, there's no one which can challenge the position of the Commodore 64.

Commodore, though, seems to have lost faith in the small computer market, perhaps because of the relative failure of the C16 and Plus/4. The company's future plans revolve around machines designed to compete with Apple's Macintosh and IBM's PC, both of which are regarded as the American market as machines for use at home as well as in the office.

The C16, and the 128 version which has a built-in disk drive and detachable keyboard, are clearly aimed at the Macintosh market. In this area, although there is a certain amount of generic software, the emphasis is on productivity and creative software — spreadsheets, databases, art packages, planners, and so on. The Hyperion, Commodore's IBM-PC compatible machine, will have to compete with similar machines from Apple, Olivetti, Compaq and many others. Only if it can be a reasonably competitive with Commodore in this is to compete the market. The third option, the Amiga home machine, is still very much an unknown quantity. Officially Commodore would not be hinting at Amiga if the product had nothing else to offer — but where will the company find a new market?

The last reason that Commodore is determined to succeed in the business market: The 6000 series has achieved large sales without having a high publicity profile, and consequently there's no reason why the new machines can't be equally successful, given that Commodore clearly intends to push them hard.

If the small computer market is to continue to be important, Commodore's focus will be divided between two somewhat conflicting interests. Perhaps no other computer company could carry a C16, whereas the likes of Sinclair and Amstrad are strong in both the home and business markets. Commodore, however, should stand a much better chance of success.



C16 BOOK BARGAINS

THIS IS YOUR chance for all C16 owners to get Melbourne House books at an exclusive bargain price!

Commodore Plus/Plus readers will be able to buy any of the three C16 books, normally零售 at £3.95 each, for only £1.95 each. The three titles available are:

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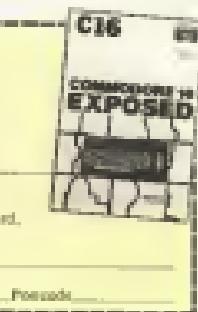
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NAME

ADDRESS

AGE

EDUCATION

COMPUTERS OWNED (check)

CBM 64

VIC 20

C64

Plus/4

OTHER (please specify)

How often do you buy Commodore Horizons?

Always Sometimes Rarely

Do you subscribe to Commodore Horizons?

Yes No

Which other computer magazines do you buy?

Commodore User
Commodore Computer International
Star 64
Your Commodore
Zzap 64
Popular Computing Weekly
Personal Computer News
Home Computing Weekly
Other (please specify)

How much money have you spent in the last three months on:

Software Hardware

What peripherals do you own? (check)

Printer Disk drive
Joystick Monitor
Speech synth Music keyboard
Computer table Computer case
Printer/plotter Scanner
MIDI interface Other (please specify)

What do you use your micro for? (check)

Games Word processing
Record keeping Spreadsheets
Graphics Music
Other (please specify)

Are you VERY interested, FAIRLY interested or NOT interested in the following?

	VERY FAIRLY	NOT
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Adventure games	<input type="checkbox"/>	<input type="checkbox"/>
Worldomania	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheets	<input type="checkbox"/>	<input type="checkbox"/>
Databases	<input type="checkbox"/>	<input type="checkbox"/>
Computer graphics	<input type="checkbox"/>	<input type="checkbox"/>
Computer music	<input type="checkbox"/>	<input type="checkbox"/>
Basic programming	<input type="checkbox"/>	<input type="checkbox"/>
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Often Sometimes Never

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News	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Have you ever entered any competitions in Commodore Horizons? Yes No

Was the prize offered - hardware or software ?

Do you plan to change your micro in the next year?

If so, what to?

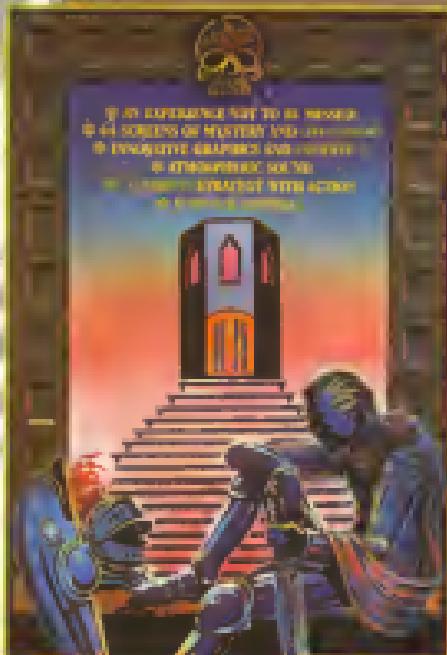
How many computer books did you buy in the last three months?

WHAT SORT OF FEATURE WOULD YOU MOST LIKE TO SEE IN COMMODORE HORIZONS?

GATES OF DAWN

A DREAM OVER THE TIME-SPLITTER

Our long-sleeping man has been challenged by the mystery of his dreams. Deep within each dream lies an enigma as yet unsolved. Journey through the Gates of Dawn and experience the narration of the surreal world of dreams in this vibrant arcade adventure. Enter these portals and lose yourself in a dazzling and perplexing world where nothing is as it seems.



PREPARE YOURSELF FOR A DAZZLING EXPERIENCE

Gates of Dawn is available for the Commodore 64 from all good software retail outlets from 11th April.

R.P. £19.95 C64/AM

Also available from Virgin Games Limited, 2-4 Vittoria Street, 119 Portobello Road, London W11 4EE. Tel: 0181-734-1111.



Goodies galore

LIKE MANY of your readers I keep my issues of *Computing Micros* for many years, as they are most useful for referring back. It is often surprising when you turn you have read something in one of them, but have to spend hours poring through the index of each until you find what you are looking for. Would it not be possible to publish a cumulative index annually, say issued in January, soon after the previous year? I've seen many of your readers would appreciate this.

J. W. Hartman
Tasmania

Sorry

It's a very good idea, and one which we're working on. In response to many requests from readers, we're also looking into the possibilities of making available readers for the magazine, on which see for details in *Issues* section.

COBOL, cobbers

WITH RESPECT to a recent letter to your *Autumn Back Issues*, in which V.P. Reference wrote of his need for a version of COBOL. The necessary CP/M package is

available over here, as is the Commission approved version COBOL.

It seems the biggest drawback of the COBOL is that it is not popular, and only a fraction of the third party computerware is produced in available in any one country. A great shame, wouldn't you agree?

Paul Marston
General Manager
SUNOF '84
PO Box 515
Wellington 4103
Western Australia

Random actions

IN YOUR February issue one of your letters dealt with writing random numbers between 0 and 255 in machine code. Here is a useful trick which I think will be a great help to all machine code programmers.

LDA = MTP
STASDOP
LDA = MIO
STASDAD

Once this code has been executed, use LDADIB1B to create a random number between 0 and 255 in the accumulator. This can also be used in Basic with POKE 94387,255, POKE 14090,128. Once this code has been executed, POKE(14090) to get a random number. This is totally useless in Basic, as

INTERVIEW 255 will do exactly the same thing, but the first method could be used in a program to randomise a reader!

Alan-Yann Severe
Offshores On File
Perth

Tricky tips

TWO POINTS concerning letters in *Autumn Back Issues*, on using offset flags. I think Dennis Mills was referring to the word significant bit register as 1024. Each byte can have a value between 0 to 101, but only values between 24 and 343 are visible on the screen. If the X position of the byte is greater than 255 the bit in the X most significant bit register must be set to 1. (Quoted on) If the X position of a byte is less than 255 then the X.M.S.B. must be 0. (See also 7 of the X.M.S.B. register (as required) an offset of 7.

This simple program demonstrates the use of the X.M.S.B. by repeatedly moving a byte across the screen.

10 PRINT CHR\$(147)

20 POKE 3040,13

30 POKE 1-0 TO 42 POKE

32 X+1,128,NESET

40 V=12848

50 POKE V-21,1

60 POKE V-19,1

70 POKE V-1,108

80 FOR J=0 TO 124
90 IF J>255 THEN
J=0 PPRINT V-14,1
100 IF J>255 AND
PPRINT V-14,1 THEN
J=0 PPRINT V-14,1
120 NEXT

Secondly, concerning the letter above displaying a screen while loading a program. The screen is masked by the computer as part of the tape handling routine. The mask location, as IBLANK from 1024 TO 2048 and 21024 TO 3120 is masked by the computer, and sets of 128 8-bit locations (1280 to 1311 & 21280 to 2131) are masked by the screen, and sets of 128 16-bit locations (1320 to 1331 & 21320 to 21331) are masked by the screen. So if anyone knows how to turn the screen, I'd like to know.

P. Don
Darwin

Whoops!

OUR APOLOGIES for failing to include the C16 listing promised on the cover of the April issue. This listing had to be withdrawn due to last-minute production difficulties. It is our intention to include material on the C16 in every issue, whether it be a listing, a programming article or a software review. We hope that this issue's C16 software roundup will reassess readers that the C16 is worth supporting.



Menzies rewards intelligence

SCOTTISH and Nottingham have won first prizes in the John Menzies Young Programmers of 1984 contest.

Three teams in the under 12, 13 to 15 and over 15 categories were presented with their prizes at a ceremony in Edinburgh. Each winning team was awarded £1000 worth of computer equipment and a selection of intellectual prizes.

The judging panel included author Tom Harrell and artificial intelligence expert Dr Donald Michie.

Entrants were asked to write a computer program which would find the missing number in a sequence, and show its "thought processes" in a working

C128D on the way



THE 128D is due to be available in May, priced at £1,299

COMMODORE's latest announcement of the forthcoming C128 indicates that there will be at least two different versions sold in the market.

The basic C128, previewed at the San Diego Consumer Electronics Show in January, is a successor to the Commodore 64, with three modes of operation, C64 compatible, 128K with extended BASIC, and CP/M mode. The C128 will have the same operating parameters, but will have features that allow an detachable keyboard. The processor will be designed as a 6502A running at 1MHz.

It is thought that the C128 will be manufactured in Mexico, and the 128D in France. Launch dates are still unclear, with Commodore sources quoting various dates in the first half of this year. With the current unpredictable level of the US dollar, it is also impossible to give any accurate estimate of price at present.

Therefore only have to make one type of disk to cover all the Commodore machines, cutting down on overheads and saving shelf space. The forthcoming C128 is already attracting solid word support. Audiogames' BASIC 3.0 and Superdudes' previewed Disk format has been converted for the C128, and should be available as soon as the machines are on the shops.

The C128 version has a working size of 64 kilobytes by 480 rows, and takes advantage of the 128's larger memory and built-in 80-column display. The popular screen options and range of functions and formats remains the same as the 64 version. Other software in preparation for the C128 includes Commodore's Perfect series and Precision's SuperBasic — a follow-up to SuperBASIC — and SuperBasic.

Mouse in the house



KMC SUPPLIES has announced the release of a mouse for the 128 at £59.95. It is obviously not intended for game applications, but should prove useful in fields such as computer-aided design and graphics art.

The software packaged with the mouse gives the user the facilities of sixteen screen colours, various brush sizes and shapes, rubber banding, graphic shapes, fill, and variable line size. Screen dump

for Commodore printers is also included, as is a sprite editor and a character editor which can generate data to be used in the various art programs.

Most popular computer software can be used with the mouse, which will be available through High Street and independent retailers. The main distributor is KMC, 11 Weston Parade, Gt North Road, Barnet, Herts, H4 0BD.

One size fits all

GAIL WELLINGTON, head of Commodore's European software acquisition team, has announced plans to produce software on a single disk which will work on all four current Commodore machines, the 64, C128, Plus/4 and C164.

The different versions of the program will have loading routines loaded which will enable the user to load the correct version from the disk. The software retailer will

Talk to
the
stars...

MICROMET's latest service, the Celebrity Chatline, has now been launched. The first telephone program to be broadcast live on a regular weekly basis, the Chatline will allow Micromet users to interrogate luminaries in the world of computing over telephone evening from 7.00 to 8.00.

Microsoft's Balmer, David Bailey, will travel to the computer forums, and answer their questions on users' and on questions on special message forums.

A list of the subjects, which includes Michael Freuden of Channel 4's program 4 Computer Buffs, Lord of Maddington, author Mike Singleton, and David of Software House's representative Paul Duffy, will be published in Microsoft.

For more information contact Clare Walker, Microsoft, 1 Mortimer St, London W1, 01-580 1142.

...and
shop on
the phone

ELECTRONIC shopping service CompuShop has linked with CompuNet to provide a new service called CompU-Shop Online.

The new service allows CompuNet users to gain direct access to CompuU-Card's Database in Windsor. This gives details of product features, models and prices on items ranging from electrical goods to musical instruments and gardening equipment.

Immediate purchases can be made on any of the goods, or the service can be used to compare product information. Price reductions are guaranteed on all products, where overheads are removed.

The service costs £20 per year to subscribe to the CompuNet membership, and a pool for through CompuNet's direct debit system.

For details contact CompuNet at: Marston House, 15-18 Chippenham St, London W1, 01-581 2242.

Just a quick byte



MICROMET's Celebrity Chatline Appeal is now being supported by the sale of the half Acid James cassette. The cassette is priced each £4.99, and all profits go to the Cancer Appeal.

The tape, co-produced by Bob Coates of Quicksilver, includes the music from the World and games from AMF.



Artemis, Big Blue, Kite, Interceptor, Green, Quicksilver, Tusk, US Gold and



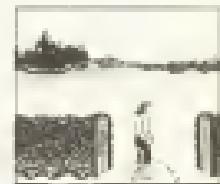
People. After some initial problems with Bill Smith's, who were reluctant to stock the tape due to its cover artwork and the lack of any declaration on the outer packaging that the proceeds were going to the Cancer Appeal, the problem has been solved by the addition of a black sticker.

Gargoyle's myths and legends

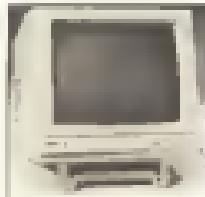
GARGOYLE GAMES' revolutionary *Tir Na Nog* is now available on the 64. Retailing at £9.95, *Tir Na Nog* retains the high resolution graphics which caused such interest when the Sinclair Spectrum version was released last year. Programme Roy Carter was nominated as Listener Programme of the Year at the Computer Trade Association awards, and *Tir Na Nog* was nominated in Game of the Year.

The game, a complete arcade adventure, follows the adventures of Gargoyle Database in the battles with figures from myth and legend to regain the Four parts of a mythical land.

Contact CompuShop 220727.



Monitoring the situation



PHILIPS has announced a new range of computer monitors with prices starting at around £30.

The TMS1 has a 9 inch monochrome display, anti-glare dark glass and an integrated stand, and will cost around £30.

The TMS2 has a colour display, and will cost around £60. The TMS3 has a colour display, and will cost around £120. The TMS4 costs around £130, and is designed for the IBM PC. Top of the range is the full colour CT 2000, at around £220 which incorporates a TV receiver. The unit features a choice of RGB, RF or CVBS input, and the colour unit uses a optical shadow mask to give an exceptionally sharp image.

For details contact Philips Electronics, City House, 205-213 London Road, Croydon, CR1 4BB.

The best of both worlds

John Cochrane finds to his relief that Whitley's Commodore 64 Spectrum Simulator software doesn't make the keyboard go all squirty

HELLO, my name's John. I have a Commodore computer, and a Spectrum computer, and a Commodore 64, and a Commodore 128, and, forget it. Life used to be simple. I had a Commodore 64 and a Sinclair Spectrum. I plugged one of them into the TV and was happy. By now, that's all changed now. Someone at Whitley Computer thought it would be a good idea to play a little trick on John. Said that the new program, they said. Then when he's playing around on his C64 he will be able to witness that he's actually

instead of simple sounds and high-resolution graphics. Most program reviews printed in the popular magazines are for either the C64 or the Spectrum, with the Spectrum Simulator you can benefit from both. If you have a friend with a Spectrum then this could give you a means of sharing programs and data. If you just want the intellectual challenge of learning how to use a different machine but are not up to speaking terms with your bank manager just at the moment then this could be a worthwhile investment.

What's a Sinclair Spectrum doing in Commodore Hardware? Read on...

But let's get the Spectrum through it's paces. Just how well is Spectrum Basic simulated? In terms of the number of commands and functions provided it does very well. The only commands not fully implemented thus far as I can tell are CLASS and UOPEN (used for KS-12D and other file creation), IN and OUT commands (hardware unsupported at macroprocessor level), MOPEN (macrodrive file handling),

but you will need to get a good book to help you with the language.

Of particular interest to C64 owners are the various plotting and driving commands. The Spectrum screen format is 256 pixels across by 192 pixels down compared to the C64's high resolution capability of 320 by 200 pixels. The big improvement offered by Spectrum Basic is the ease with which the display can be controlled. Unfortunately the only font that I came across is reverse, the Spectrum Simulator was in the OS/48 command, which caused an occasional but complete crash.

Some things work better with the C64 hardware than they do with the original Sinclair box. The best example is the way that the Simulator lets you use the C64 disk drives as if it were a Sinclair Microdrive, but with the improved speed and reliability of the disk system. Whitley says that the BPPS 800 printer and a number of popular applications can be used to test programs, etc., although I haven't got this far yet.

Lastly the speed! I have prepared a short table comparing the relative times to perform simple operations of a real Sinclair Spectrum, a Simulated Spectrum, and a standard C64. All times are compared to the real Spectrum, thus the indicated times of 1.7 seconds that the operations will performed once as quickly as the Sinclair. These timings are obviously rather crude but interesting none the less.

COMPARATIVE TIMINGS TABLE

OPERATION	Real Sinclair	Simulated SPECTRUM	C64
TOP NEXT loop	1	1.7	0.4
PRINT	1	1.7	1
SEMI	1	1.9	0.6
LOAD paper	1	1	2.0
LOAD (floppy disc)	1	0.8	0.5
DRAW	1	2.8	—

and BRIGHT this is one place where C64 hardware cannot deliver the goods in beating the display performance. These commands are not greatly needed however, as there are over 30 other commands and functions available, nearly all of which are used more often than the missing ones.

One of the worst features of Spectrum Basic is the monkey-matic system for keywords. This is preserved on the Simulator and is just as difficult to use. A HELP feature is provided though, in the form of a look-up table on a PET screen to remind you which keys do what. The document also provided with the software is very unusual and, as Whitley advises, unless you are already very familiar with Spectrum

so when can I say? I think just the Spectrum Simulator is one of those programs that is designed for computer hobbyists. If you like testing out all the possibilities of your computer, if you like looking at different ways of doing things, then you will probably like the Spectrum Simulator. ■

Transportability

It's possible to write a program on a Spectrum, save it to tape, and then to load the program from the same tape but using a Commodore 64 plus C64 cassette deck and run the program on the C64. Or you can do all this the other way around if you feel inclined. This program transportability is limited to basic programs only though, machine-code programs will appear on the Spectrum Simulator. Now the question over the relative merits of these two machines isn't just a trick, only the C64 can give the best of both.

I can't think of any single important reason for saying that everyone should rush out and buy the Spectrum Simulator, just lots of little ones. Spectrum Basic is quite reasonable and gives you very good

Software: Spectrum Simulator
Manufacturer: Whitley Computer Ltd
Price: C64 £11.
Supplier: Whitley Computer Ltd,
7 Castle Hill Road, Whitley,
N. Yorks. YO1 5QH (0904 610054)



Get soft with your micro... and make the best of it with Brainpower



Micro computers have come a long way since the days of the early 1980s. Today's micros are fast, reliable, and easy to use. They can handle a variety of tasks, from word processing to spreadsheets to databases. They can also be used for networking, file sharing, and other network-related tasks.



1980

Micro computers have come a long way since the days of the early 1980s. Today's micros are fast, reliable, and easy to use. They can handle a variety of tasks, from word processing to spreadsheets to databases. They can also be used for networking, file sharing, and other network-related tasks.



1985

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SOFT★HITS

Seaborne slalom

Aqua Racer is a bit like *Arcade Pinball*, and I don't mean that it's weak in any way, it's nothing like that. It's a fast, fluid, and possibly even more intense than *PP*.

Although there's some horrendous off-line music introducing the game,

everything goes well from then on. A little man lifts a cannon, and you're off, steering your speedboat — shown as the bottom section of the screen — along a winding track of buoys. As with a racing car, you change gears to attain maximum acceleration when necessary.

There are dozens of up-downs, which will intermittently bump you into the buoys if you're not careful, and junctions which mean you

when a curve is coming up.

There are 20 circuits, all of which have to be completed in

a certain time, and a full range of bonus modes, player options, and so on.

It's well worth ploughing through a practice lap without any options before trying the real thing, since it's very difficult to get the hang of it. However, *Aqua Racer* is an exhilarating experience. Watch out for the rocks.

Program: *Aqua Racer*, 44
Suppliers: *Software Doctor*
Price: £7.99

Graphics: **★★★★★**
Sound: **★★★★★**
Gameplay: **★★★★★**

Board of the Rings

Many computer versions of *Archon* board games have one major flaw — *Archon* is different, because while retaining the strategic element of strategy, it appeal to thoughtful puzzle players, it also has a pleasing element of all-around.

Based on chess, *Archon* can be played by one player against the computer or by two players with graphics. The chess board includes five "power pieces", which you must occupy to win the game. The

players — Knights, Masters, Rooks, Knights and so on —

which side is on the ascendancy.

When two players occupy



right for Light and Dark, and in the game programs, coloured squares indicate

occupied squares, movement being regulated by chess-like rules, the attack varieties to the

However, if you're descended to do it, do it properly. US Gold's version of *Rock Blasters* is very faithful to the original.

The game is split into two parts. The first part is flight represented by a large rectangular space, where you're a parapeted hero, fighting your way through the sky. The second part is the planet where you're shooting tanks in the attempt to get through the barriers on each side of the screen without crashing. But here's the thing: by the time you reach the planet, you're

now the distance and a nicely detailed background. The control direction, speed and

base to be shot. By this time the lasers are projecting energy beams which will be



one of you pass on either side.

In the next stage you need to use space and have in sight of

one other wave of aliens, including a mother ship which drops fast-moving fighters. If you manage that, it's on to the next planet and the next wave of aliens.

One of your demands requires under than a single tap from your joystick.

Program: *Rock Blasters*, 44
Suppliers: *US Gold*
Price: £11.99 (cass), £14.99 (disk)
Graphics: **★★★★★**
Sound: **★★★★★**
Gameplay: **★★★★★**

Space hoppers

ILL BE TAKING that it is not likely the game is to be an all-program which consists of nothing but jumping. Even when they're conversions of popular arcade games, I doubt that the element of jumping will be enough to make such games as the audience

without appeal to qualify for the stand alone. You can select the number of hops you want to complete.

Now at least that if you have entered the course at 100, you won't complete it in less than 100, by the same token. Remember that that ploughing into the back of another racer at 200, or driving off the track on a tight curve, is not good for your health. Good engines.

The sound effects add a little zip and zippi-ness to the

atmosphere, and you'll soon get the hang of changing gear, accelerating, braking curves, hopping the tight line, and selecting your position to make the most of the layout of the later tracks. Awareness — get it.

Program: *Rock Blasters*, 44
Suppliers: *US Gold*
Price: £14.99
Graphics: **★★★★★**
Sound: **★★★★★**
Gameplay: **★★★★★**

First gear

THERE is the original and *Second Gear*, and *Mountain Man* which I've wanted to try for a while. *Happy Pinball* is my family's one of the most exciting and enjoyable games available for the Amiga, so any other machine for that matter.

The screen represents a cockpit view from a Formula 1 car, with the track winding its way around the mountains

your selection with the scrollball, and next turn completed, a pleasant tap

SOFT★HITS

Winter kills

This game is very unusual. It is worthy of note if only because it comes totally from a 3D isometric point of view. In addition to platforms, you have to climb or crawl through different formats.

The game is played on five screens — you press the space bar to jump from one to another. The first is a simple maze of water flowing

between rocks. Each is marked with a speech, like rooms can be opened. Most rooms contain various useful objects. The rooms allow you to replace your hands, and rooms can be opened with difficulty. You control an adventure hero who must make his way through the maze. Each rock can be rotated by pulling back on the joystick, allowing you to escape through previously untried paths.

The Ice Queen sends various missiles at you in, including bolts, bolts and flying rocks.

Auto Blaster This was always one of my favorite adventure games — the hidden rooms

alone, hidden documents, subways, or dungeons, and in addition to the threat of alien

Yuri Shiroki will stand off most of these. The other screens give the states of joint French, your level of goodness (which affects that's, killing enemies and inventory.



Various objects as be found in the Ice Palace will enable you to find pieces of the Crown which is your goal. If you

make you have a bad time and an overbearing bear to cope with. Nippon Ware keeps most of these elements and often keyboard or joystick control. The graphics are nothing extraordinary, either in design or concept, and some of the areas look remarkably slow. Through your shop can move pretty quickly from side to side in the early stages aren't much of a challenge.

All the usual elements are there, maps, word effects,

music and a piece of the crown, a spinning cylinder appears, and you move on to the next level.

I haven't yet been able to get very far with the game, because I've been spending too much time just watching the excellently designed graphics. This one looks well worth taking at though.

Program Ice Palace, 64
Supplier Creative Software
Price £19.99

Graphics *****
Sound *****
Gameplay *****

high score table, bonuses for completing rooms, and so on. It will keep a lot of children happy while they're waiting for something more spectacular to come along.

Program Nippon Ware
CD-Play 4
Supplier Creative Graphics
Price £19.99
Graphics *****
Sound *****
Gameplay *****

comes as a standard 3D adventure, rendered by the studio General Games, and you must blast your way through to rescue them, then destroy the General's headquarters.

Although the game is little more than a straightforward shooter, there's a degree of thought involved in setting just the various defenses, and the whole thing is done with unusual style and richness.

Excellent, though music completely what is a superior audio offering.

Program Arrows, 64
Supplier Blue
Price £19.99
Graphics *****
Sound *****
Gameplay *****

indicators help you to monitor your situation, and you can use keyboard or joystick.

As a bonus there's a strong musical score, and the whole thing is remarkably polished and moving.

Program A.C.E., 64
Supplier Cascade
Price £19.99
Graphics *****
Sound *****
Gameplay *****

Master blaster

General's contribution, on the growing number of CD games doesn't have much of the originality and graphic implementation we've come to expect from the company. It's a very straightforward offering, based on the arcade formula

Copper In a chopper

Games based on TV series are usually disasters, but a rare sort of effort has gone into this version of the short-lived show.

Arrows is a sophisticated and powerful combat helicopter, and you must control it as a dangerous invasion unit an underground terrorist base. The plot is very much like *Point Blank* from US Gold, but the graphics are immensely superior. The chopper itself is



a finely designed, and the people of the underground terrorist are noisy and vicious, bombing bolts, flying missiles, strong currents, and so on.

High Flyer (for the Amiga) will give you the view from the cockpit at a high performance



flight overall. You maintain a set altitude and steering

the most effective way to a assault, make if you release the cockpit, enemy aircraft and you'll crash.

Hold the down-share on the

mouse pointer.

Your radar display gives you the bearing and rough altitude of the enemy aircraft. Your armament consists of normal and heat seeking missiles, but you must remember that missiles will always explode when you attack them, so it's best to make the first shot count.

Fuel, velocity, altitude, pitch, roll and damping

indicators help you to monitor your situation, and you can use keyboard or joystick.

As a bonus there's a strong musical score, and the whole thing is remarkably polished and moving.

Program A.C.E., 64
Supplier Cascade
Price £19.99
Graphics *****
Sound *****
Gameplay *****

High flyer

It's a good sign that software like good for the C64 is now starting to turn up. A.C.E. is an air combat monitor which is about as good as anything you can expect to see coming along. The limited memory of the C64

like Digital Integration's

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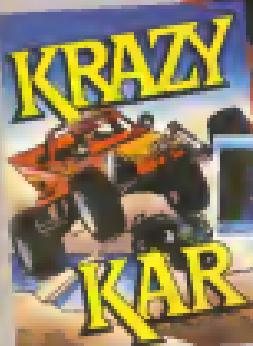
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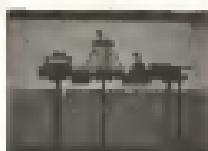
SOFT★HITS

Oil be seeing you

THIS IS ONE of several wacky offerings from Tynwald, who are doing more than anyone to support the C64. Although the game is very simple, it features excellent use of graphic designs and has good basic controls.

You control, using keyboard

or joystick, a helicopter which journeys across a sunburnt, arid wasteland. The body



helicopter or "chopper" which

you control, which has a single seat. The helicopter which carries the oil tank of the chopper. They glide beneath the sun, flying steadily forward, and you must stop them by flying low enough to bump them, while avoiding flying over destroyed ground. When the economy runs out, you can't refuel, and you can't stop bumping while you're descending or you might blow yourself up. All in all it's pretty tricky making the economy last.

The problem of the oil can

isn't solved. The screen scrolls around to show the section where the fuel is, and numbers on the truck help you

Hou-ston! Hou-ston!

A REMARKABLE debut in the Amiga software market, Rocket Ball from LBE is without doubt one of the most exciting, enjoyable and original games yet for the machine. It may be based, since I've always been a great admirer of *Robotball*, the James Bond film on which the game is loosely based.

Rocket Ball keeps most of the rules, two hot keys cause slow anti-clockwise turned a double track, righting the possession of a red ball. Javelock control allows you to control the speed, track

around the screen above the rest of your ball supply — when it's flushed red you must get to a rig and land on a position, pushing, pushing, throwing and passing of your ball. As in *Robotball*, the screen



changes as the ball changes, colour to indicate who's under

start. There are two types of arena, a circular map of central locations, marked with

to work out where the goal is. It's a truly innovative starting up to

encounter the bonus characters and collect the animal cases which make up the last section time.

The game is fast though repetitive (how many times you could go through based on the RSI), and the intention of the game is to require more thought and strategy than skill with a joystick. In short, it's an anti-social effort. After playing for half an hour, I realised that there's a lot more depth to it than is obvious at first sight

depth and care.

Since you can apparently



the major mediaeval stations, and a "morning" screen where you must try to

reach the 64 to an hour. The time was limited to one hour, though, when each of the great man's contributions that he would develop a game so far out that it was quite impossible for humans to play. That Miller, I tell ya.

You control a family of three. It's a man, a woman and a magnetically directed baby-droid. The droid is used to attract stationary buildings which supposedly move in all



sense, which order you want to play through the places. Miller's game is more than just a straightforward shooter. But

an extremely original — not 3D, nor particularly highly detailed, simply well thought out. In fact it's doubtful whether you could achieve anything as good on the C64. In all this program should satisfy most C64 owners, and Tynwald's previous titles might do too.

Program: Big Attack, C64
Supplier: Tynwald
Price: £19.95
Graphics: 8+ 8+ 8+ 8+
Sound: 8+ 8+ 8+ 8+
Gameplay: 8+ 8+ 8+ 8+

The goal, obviously, requires skill, shooting to catch the ball, slowing down, and launching the ball onto the magnetise place.

There's a full range of menu selection, two player options, game modes, and an awards screen. Two main objectives — no enclosures and no "reaching" award effects as you move along. Otherwise, it's a nice combination, with graphics to match any arcade game yet, and the fastest, most exciting play ever.

Program: Rocket Ball, 48
Supplier: LBE Software
Price: £17.95
Graphics: 8+ 8+ 8+ 8+
Sound: 8+ 8+ 8+ 8+
Gameplay: 8+ 8+ 8+ 8+

The character selection has only enough grades to the requirements of the heroes, you must use the color map to know the and other status information very definitely. I prefer to encounter them successfully.

Program: Over My Regards To Broad Street, 48
Supplier: Argus Games Software
Price: £17.95
Graphics: 8+ 8+ 8+ 8+
Sound: 8+ 8+ 8+ 8+
Gameplay: 8+ 8+ 8+ 8+

in fact, it's an obviously complicated about it as I take a three handed. Biggs' game attempts to work it all out. I'm not even going to try to give this rating for programming — if you want a real challenge you get out and try it.

Program: Manic Miner, 48
Supplier: Electronic
Price: £17.95
Graphics: 8+ 8+ 8+ 8+
Sound: 8+ 8+ 8+ 8+
Gameplay: 8+ 8+ 8+ 8+

On the run

CARRY MY REAPERS is that rare offering, a really well designed concept which comes out good in practice. Based on the commercially well-favoured film, the game retains the same basic plot — however, the video material depicts all Paul McCartney's latest album before midnight, or lose your

Minter Mania

THE release of a Diamond game is always an occasion of some special excitement. No surprise for another whacko, graphic action and innovative graphics, Jeff Minter's games often



seem which order you want to play through the places. Miller's game is more than just a straightforward shooter. But

Caught in the net

Bill Donald looks at the latest developments in CompuNet and Micronet, notably Prestel emulation and the ever-popular Jungle

IF YOU regularly access Micronet and CompuNet with your machine and Commodore 64, you will have seen a number of changes since the start of this year, some of these major alterations, some minor in nature. There has also been an increase in the number of available private VMEbus systems to the network user, of which more later.

The first major change took place when Chameleon as the new Prestel Emulation program from the 128 Computer Disk package package has had a considerably history, and I am sure I am not alone in wondering what Micronet and CompuNet are up to with regard to the Commodore 64.

The saga starts in October 1988 when, much to the displeasure of the domestic financial controller, I acquired the Commodore 64, plus, the preceding month out of the stock control function fairly quickly giving a chance to open the machine. In common with most of you during the early days, the telephone calls took a turn in order to prevent the learning curve. We soon discovered, those of us with the Chameleon module, that no access Micronet a program called Terminal had to be downloaded from CompuNet. Of course, paying out more money for a reference to Micronet. For the sake of clarity I will call this program Terminal block 1. This program was very much a case of pay off for ideal conditions in the way of file updating for terminals, the evident editor in the question was that for CompuNet but not for Micronet. Also, the printer options were not available, and I had several discussions with Tel 99 electronics and of course over this very point.

Then in January there came a further blow from CompuNet, telling us that an off-line mail and voice facility was included in the new Terminal block 2 program. This was downloaded and I was very impressed at all with the operational improvements. I found a VME card, enough so that I re-installed using Terminal 1, and at the time of writing I have not paid the £15.00 demanded for Terminal 2. Finally, in early March this latest, and, by the looks of it the last, Terminal block 3



arrived, on Micronet, and guess what it is FREE!! My interpretation of the whole episode was offered to fellow members of ICPUG, Brian Granger in the last issue of the ICPUG journal, Micronet, CompuNet and Tel—"Get your acts together". It should not take the length of time to come up with a realistic Prestel emulation program.

What are the benefits of Terminal block 3? Well, the big plus has to be the editor facility. I happen to be fond about screen formats, wrapped words and splitting monitors. The second plus point of the printer option, and it is having fun with the Epson and Olivetti printers, as I am sure all of you with any Commodore printer will have, are VME bus also included a high resolution mode for Epson and others. Access to the address bar in the middle of an on-line timer in the bottom right-hand corner of the screen. Download Terminal 3 as soon as you can, it really will turn you round!

Terminal

My suggestion for Terminal block 4 would be as follows — 1. First edition of Commodore graphic system to interface, 2. Creation and transmission of DYNAMIC Pages, to option 3. On line check, very defined. 4. Individual on line call menu displayed alongside check.

CompuNet is now listed as Frequently in Silence, and I am sure very all know the reason why. The referenced software of response coupled with a small number of access point means a dull thud on the menu when the telephone bill arrives to chide the bold.

I really believe that until the

system is improved by September 1989 at the latest, then there has to be the problems ahead for the long term survival of CompuNet. Why have I chosen September? That is when the renewals become due for next year, and I believe the timing the crucial for many CompuNet users.

I am not anti-CompuNet. For them is, the quality and range of programs far exceeds that of Micronet. The contents of CompuNet for a Commodore 64 user are a godsend.

However, it is no good to any of us to have no replacement material available and yet at current upwards of £15.00

payable up to June. Please, when the door does open, the JUNGLE is broken, COMMUCAT and other information up to date. The entry of the first of the bulk of CompuNet material, unlike Micronet, is planned by us, the user. One of the main useful pages displays a menu of all software available on CompuNet, along with page number, type and cost.

The other networks I mentioned earlier are the Knowledge Index and Prestige. They appear to be similar in size and content, although, news, stock market and company information. Based on American standards, especially the memory costs can be rather high. Certainly I would personally budget £50.00 each as a minimum starting and download cost. I would read their literature very closely to ensure that the type of information you require is there. For instance, the published books' contents is only abstracts. The British Library database system BISAC, which is available on CompuNet, is a project, would probably be looking at to pay the cost of format you would be buying later still, off price public library for a look. BISAC is organized in one of the large books. I fear that these American-based database systems have little hope of succeeding in this country simply because of the high initial cost without a clear purpose of the product. Suggestion to us here come FREE documentation of their work on Micronet or CompuNet.

If you want a disk or cassette across any referencing frame on the networks for me now, my Prestel mailbox number is 079479422 ■

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I ain't 'fraid of no ghosts!

David Crane, top programmer for Activision, lets *Christine Brakke* in on the secrets behind *GhostBusters*, *Gallop*, *Ghostbusters* and his other top-selling games.

LAST YEAR'S Christmas hit in the software industry was undoubtedly *Ghostbusters*. The Commodore 64 version alone sold over 100,000 units in the UK, and its use of music and speech synthesis is probably the most spectacular yet on a home micro.

We spoke to the writer and designer of *Ghostbusters*, David Crane, Activision's top programmer, when he visited the country from California recently. *Ghostbusters* was far from David's first big success — he wrote many early games for Activision on the Atari 8032 computer, and its successors *Gallop* and *Detention*, also available on the Commodore.

Ghostbusters was, however, the first game David programmed directly for the Commodore — previously he had always written programs for the Atari series — Commodore versions coming later.

The first time I tried to use the micro in the States — when it was breaking out of its records — I had no idea that Activision was negotiating with Columbia for computer rights. It was a good thing I stopped the micro. A couple of weeks or so later, I was asked if I would be interested in writing a game to be based around *Ghostbusters*. I was interested, but the big problem was that they wanted it finished in six weeks time.

"I usually spend around eight months over a game — the first two months I work on an overall game plan and write the screens and then spend six months refining it, going over all the small details and debugging."

"I was interested in *Ghostbusters*, but I

didn't think I could do an improvement for the first time. Activision decided we could do *Ghostbusters* as a home effort — I could work out how the game was to look and what would be contained, but we could get others to help with the implementation and refining off."

"That evening I went to use the micro again — the one from a rather different viewpoint — and I realised that I already had some screens for a game I had been playing around with that could be used in *Ghostbusters*. It seemed to make the job a little easier. I agreed to do it, and began bringing the message of it from that day on."

Screens

The screens David had been "playing around with" previously were the opening menu loading stages and the various views of the car on the road, made in the final version when the ghostbusting team set off to stop Slimer.

"I had that vague idea for a game whereby you were buying weapons to stop some kind of baddies you might find on the road. They fitted in quite nicely with *Ghostbusters*."

David worked on these screens on a starting point: "In the first few days, that I worked on it I had my game plan defined,

by sitting down and looking at the obviously I had to work within. I had more screens, I had to produce something that was recognisable from the movie. I had to include lessons from it. I wanted to include some of the humour in the movie. At the same time, I very much wanted to write a game that would stand up on its own as a game without the *Ghostbusters* logo attached to it."

"The game elements — such as the vacuum cleaner and the day of march/madison square, I was particularly keen on. After all, it's hardly feasible to go around chasing ghosts with a vacuum cleaner!"

The music which was synonymous with *Ghostbusters* was also David's: "That was fairly easy — it was just a case of coming down with the other music from Ray Parker Jr's song and tailoring it to the capabilities of the Commodore. Then, as the song was such a big hit at the time, I thought it would be nice to include the lyrics, and came up with the bouncing ball idea at the beginning."

"The speech, which I didn't do — that was communicated by Activision from Blue Heaven Speech Systems, a California company — and in because it was fun, and that was the main idea we wanted to get across in the game."

The final version of *Ghostbusters* was finished as an Activision game on the same deadline. Since then, David has not yet started work on a new game. He was so pleased by the way that the "team" figure had worked for *Ghostbusters* that he is keen to try it for all future Activision releases. "I'm trying to promote the idea of those projects, and setting up a team

within Activision with some of our younger designers. Though if I got an idea for a new game, I can always drop everything and go and work on it."

Apart from the speed at which Activision was produced, the game marked a departure for David in other ways:

"Previously, I had simply been developing my own ideas, rather than being given a theme to work around. Over the five years I've spent at Activision, I've experimented with all types of games — I think the only thing I've never tried is a straight adventure program."

Video

"Normally, I would be working on something which I could be showing at the market about eight months later. So while everyone was writing space games, I would know that the one thing I couldn't be doing was writing a space game, because by the time it was finished, they could well have gone right out of fashion."

David's early programs, for those with less memory, were titles such as *Dragon*, *Feeding Derby*, *Lower Blast*, *Firefly* and *Grand Prix*, all for Atari VCS. The US market concentrated on video console games, as distinct from home computer games, for longer than in Britain:

"When I joined Activision as a founder-member, five years ago, we felt that the video game market would gradually give way to home computers by early 1983. That's more or less what happened in the States, except that we didn't envisage video games going up, and then coming down to

Earth."

David's first big computer adventure success was with *Pitfall*, then *Pitfall II*, followed by Activision's *Breakout*, which also sold well, though in this country it was rather overshadowed by Ocean's *Bally* *Thompson* product. In the US, though, he has carried on the sort of developing that, say, Jeff Minter has over here:

"It's always been something of an electronic whiz-kid, and designed his first computer at the age of thirteen."

"I took all the extra courses in computer and electronics that I could at High School in Illinois, which is where I come from originally. There I designed a computer specifically to play *Tetris*! I still don't quite know how motivation and enthusiasm this was, until the language problem was solved. *Tetris* is American for Memphis and *Tetris*. Well, it's a start."

"By the time I left High School, I could program in about fifteen languages, but there didn't seem to be anything very exciting I could do with them. It would have been nice to get a programming job in my family, but I was off to college instead to do an electronic engineering course."

After leaving college, David headed for Silicon Valley, and designed microchips for a living. A friend was at the time working as a game designer for Atari, and did his best to persuade David that the job was what he should be doing. "I was a little suspicious — it seemed to involve an awful lot of programming. But eventually he convinced me that it would be lots of fun, and I joined him at Atari." Whether games

GHASTBUSTERS



©1984 Activision

Designing turned out to be all I had hoped for or more; it's a market he definitely wants to stay in.

"The industry seems to have settled down a lot in the States now — obviously some companies are having problems, but I think there should be a steady growth in the home computer field now. I want to stay in the computer entertainment field for at least another few years, which should be very interesting, as the home entertainment is broadening out rapidly. For example you get products now like Activision's *Breakout* *Pitfall* or the *Marx Brothers*, which are entertainment, but at the same time useful."

I wondered how David felt about impending developments in the hardware industry, with Apple Transport discussing to develop back into the *Amiga*:

"Well, we in Activision don't really mind who is leading. It can't be for the hardware market, since we're exclusively a software company. We'll write our games for whichever machine is selling."

"As for the Apple machine — I'll believe that's what I can't. You can't beat Jack Tramiel's track record and that's a lot of respect I have for him in the States. Certainly it's machine as powerful as the *Macintosh* is at the end of the year would very impressive."

Cassette

"Then there's Commodore's C128 which as I understand will be very similar to the 64, but with more features. I'll play it as soon as the 128 and add those features that we might be able to do so that you can call the the game for the 64, because of its huge disk load."

And how about David feel about the British market? "It's a funny thing about the market in Britain — while it may not be ahead of the States, the States always think the British are development. There's a division and marketing point of view, to see what we'll be doing in a couple of years time."

"The thing I can't understand is why you go through all the measures of breaking software from a cassette — in the States we never had the problem to do that." ■



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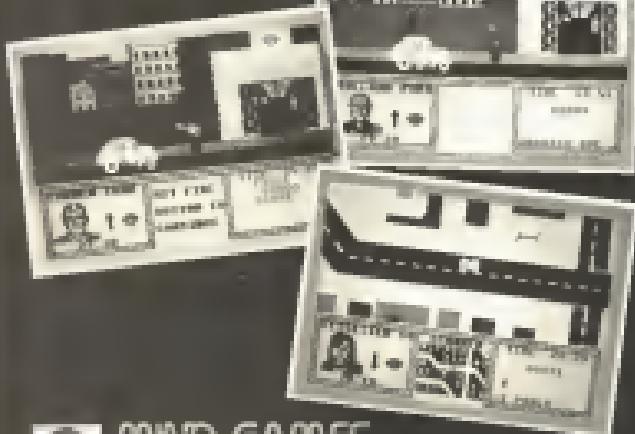
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Seeking the pentacle



Tony Kervelle dons off his spell book and tackles Ultimatum's epic

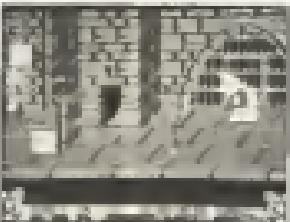
ULTIMATE is renowned as the single most innovative and accomplished Spectrum software house. The company has a string of 16 and 48K hits to their names, which from the technical point of view, by which other names have been, judged over the last two years. However, until the release of *Knights of Karmath*, Ultimatum had virtually ignored the Commodore 64, even though it offered the only market comparable to one with Sinclair's machine. Domestic conversions had been released, *Ali Pac* on the BBC B and *Vec 20*, *Space Wolf* for the BBC — but it was always as though they were aware that the compensation of top-quality games was higher on the 64, and that somehow there was a graphically brilliant span on the Spectrum would only be brought on a speech-based machine.

Despite this, demand for Commodore conversions has been high.

Spiritus

Meanwhile Ultimatum has taken a quite new approach in the pentacle has finally been released specifically for the machine. If you hadn't seen the box, you would never have guessed *Knights of Karmath* was by Ultimatum, because gone are the crystal clear, wobbly deformed characters and hundreds of locations that typified their latest Spectrum games. Knight Lore and Allies, however you have what have to be called 'cheeky' areas and only 48 add rooms, although many of these cover multi-

screen areas. The immediate reaction of many people who have seen the product is one of disappointment, but please don't let that put you off — it's a game written specifically for the 64 and it's much better than a conversion is likely to be.



Knights of Karmath has some of the finest 3D-wrapping backgrounds seen to date, many of the wonderful hexagonal textures that are typical of the company and most importantly, some of the best game play seen in their releases. Chancy graphics quickly reflect the hardware's trade off between resolution and colour, and as of late red, cyan and magenta, whereas the Spectrum games have at times been criticised for relying too much on enhanced memory whilst being unplayable by any but the most hardened visual freaks.

Karmath, however, can be enjoyed by the most稚气的玩家, and visual perfection

easy enough to give to provide incentive whilst still giving a feeling of accomplishment.

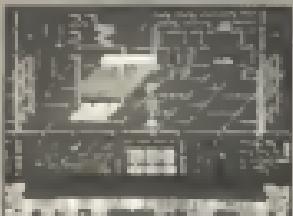
Even though you soon come up against greater difficulties, there is the assurance that the next step will be addressed with a bit of thought. Consume this with the knowledge of the graphics that did the damage in the game and you have the elusive quality — intelligence.

Okay then, what's it about? Karmath is the first in a series of four games and falls firmly into that category known as marketing men everywhere as the arcade adventure. Pixelated racing skills are backed up with the need for some deduction and for thought to overcome the next obstacle. You play the part of Sir Arthur Franchaise, magic-wielding knight errant, and you must work your round a twisted castle confronted by a series of horrors including giant stalks, ghosts, demons, twisted mutants, vampire bats, a very vicious wolf and many more and all accompanied by appropriate sound effects.

Pentacle

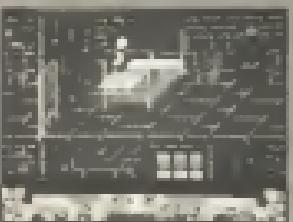
The castle is seen in one way edge on view, and although there aren't many rooms going around them is such a lot that it's a very a very large game. The idea is to find the sixteen parts of a pentacle, and deliver them to an orb that is situated on the bottom of the castle. Doing so successfully gives you the chance to take a shot at the

evil Staff spell, but only one of your dozen or so spells will work and you have to find the right one very quickly indeed. Your energy level goes down a bit every time you use a spell, and it's lost when measured by a meter, but it goes up 100% again every time you deposit a piece in the slotbox. There is also a time limit of six "game hours" in which to complete your task, although you will be allowed to hear the double chimes that there is a "real time" clearly, one game hour is much shorter than a real one. It's logically unlikely that you will survive long enough to see anything at the moment.



Screenshot from the Tower Room

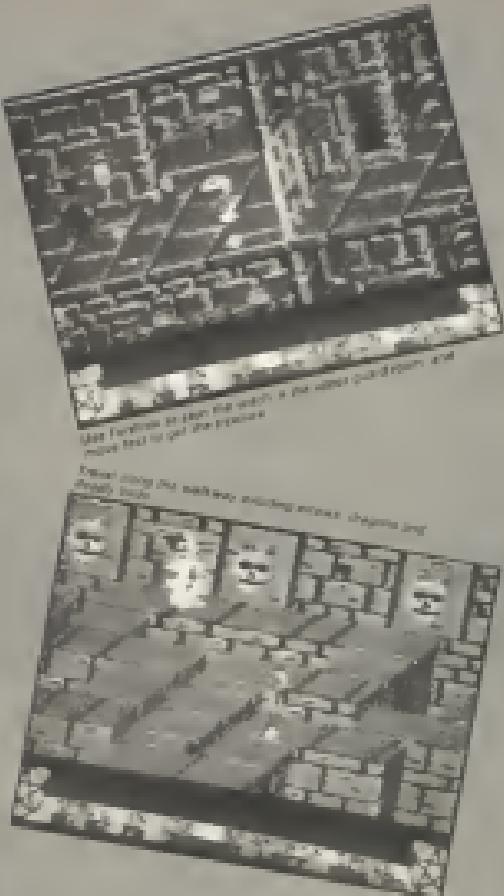
The problem with games like this is knowing how much to give away without making the whole thing redundant, but I don't want to say that the spell you start with, *Farsham*, is probably the most useful answer document and should be always listed in a new section. Besides, it's not seems to have a particular value against the lion and beast, although not always for as long as you would like. Other problems like the castle and the fire in the great hall are easily solved by a tool of spells (or setting past the guardian to the door on the outside of the first location, perhaps the pieces in the artwork on the bed, or finding out how to use the Flying carpet will take a lot of work).



use Thresh to activate the carpet

Kernash doesn't stand clearly above other 3D software in the way Ultima's Spectrum games often do, but it does have the top ten to consider. It's also worth remembering that Ultima has the habit of giving no official information, so that are a few answers in anything that has gone online — so only time will tell what they have lined up.

As the game gets older we'd like to hear from you about your tips, and to find out who has finished it. Also let us have some comments about whether you would like to see more in-depth looks at classic game pieces. ■



use Farsham to open the switch in the stone guard room and move back to find the Farsham



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Three of a kind

In the first of three features in this issue on home business packages, Trevor Doherty looks at Audiogenics' Big Three

THREE ESSENTIAL types of business software dominate the market, wordprocessing, accounting, spreadsheets, at which you can organise figures and text into rows and columns and perform an infinite variety of calculations, and databases which keep lists of similar records which can be accessed, sorted, altered and updated as required. In addition there are specialist packages for applications like accounting and stock control, but these are often only enhanced databases designed for that specific purpose. There are very few business tasks that cannot be tackled if you have the three essentials, and that applies equally well to home or office. Audiogenics has a range of software to fit those that categorise what will fit in total of under £45 — the price of a single product from some other software houses.

Pre-formatted

Five years ago, in the early days of the Commodore 64 there were only two word processors worth considering, WordPac and Wordsoft, a direct descendant of the latter in MICRO-INTERACTIVITY for the 64 (129.95 Disk or Cassette). Another relative of the original Wordsoft program, Wordsoft 64 is available from Computer Disk 95 Disk (published in the October 1984 edition).

Micro-Wordsoft is a pre-formatted word processor, that is to say the text format is displayed on the screen as you type in the same way that it will appear when you print it out. This isn't the usual affair with pre-formatted text. On the 64 though, there's a big disadvantage, the screen is only 40 characters wide while word processor print 80 characters across the page. What happens with Micro-Wordsoft is that as you type into the screen the screen scrolls across until you have reached the right hand margin and then jumps back to the beginning again. To read you have to scroll across the screen and ensure you either have to scroll from side to side or reformat the text in 40 columns. I generally prefer to use a pre-formatted word processor on the 64 which allows me to both read in and sort the formatting out when I print it.

Having said that, Micro-Wordsoft is a competent word processor, and has most features which you could ask for. The layout is most comprehensive and I found it very easy to follow with helpful "tips" in the menu. There are also onscreen help features. Text can be entered up to 99 columns wide, centred, or justified. The main control key is the CR/6 key, as an example, CR/6 in the CRM key, as text is shown on a "line" which appears

across the top of the page. The text on the screen can be magnified, copied, moved or deleted as well and a full "search and replace" facility is provided. Moving of selected paragraphs or names and addresses can be carried out, from files which have previously been saved on disk. Most users have some limitations on the facility. Pages are not automatically or automatically numbered, using the F1 key. The F7 key is the end of a paragraph that is one feature I never get used to, other word processors tend to use the RETURN key.

All disk facilities can be accessed from within the program, including Formatted if you then type a document without space space available on an existing disk, all will not be lost. Micro-Wordsoft supports standard Commodore printers, 8025 interfaced ones and has ranged software to drive a standard parallel (Centronics) printer connected to the user port. It is very easy to incorporate printer control characters in your documents.

At the price, there can be little to fault Micro-Wordsoft, at least a great many word processors I know pass it in all but for the money. By spending three more or much, you could buy a better word processor (although my Wordsoft, for example, which would be somewhat easier to use, has spelling checking available and integration with other software. But for three quid Micro-Wordsoft is a bargain.



The database Micro-Maggar (129.95) is only available on disk. The restrictions of course, file handling, block of random access, slow speed mean that only limited databases can be stored on cassette, and Micro-Maggar could never be described as fast. In fact, the facilities available approach Superbase 64 (Precision —

which I regard as one of the best database systems available on any machine — but that comes over twice as much as Micro-Maggar.

Access to Micro-Maggar is via a series of "pop up" menus, for the F5 key and a menu appears on the screen. Scroll down the primary menu using the F7 key to your choice and for F1 again, the next menu appears partially overlapping the first one. All very colourful, all very user friendly of course, but the type of menu can frustrate you as you become more experienced. A help facility is provided as the after half of the disk, which makes the manual almost unnecessary. Turning over a disc in a 1280 drive wastes the a lot, it could cause dust and dirt to fly free of the diskette to a greater the other way. Two analysis and applications are included, a mailing list and a stock control system.

In order to use Micro-Maggar you your own application you first have to create your record layout. Up to say "format" or screen are available for this, the second form can usually be longer than a single screenful, though. Field sizes are limited as is held in a separate piece of data within a record such as "address" and the number of characters held etc. This has a simple concept of typing in the desired number of alphanumeric characters for alphanumeric fields and lines can characters for purely numerical ones. Once this is complete the record design is saved and can be re-used. The data can be inserted later as required, new records added and old ones deleted. In order to carry out searches for particular records, it is necessary to learn how to use a procedure in Micro-Maggar. The Micro-Maggar procedure language is straightforward enough, but it is disconcerting to have to use a colon to denote things as fundamental as a search.

Calculator

Other facilities available include a calculator and the ability to draw these types of graph from data held within the database. The graph requires a procedure to be written. A good range of printers is supported as with Micro-Wordsoft.

Databases are notoriously difficult to create, unless of course any other business program, very often difficult on disk, clean up, so if you have a lot of data stored or are trying to run a complex procedure, I usually found Micro-Maggar much more difficult getting this into memory, than most other databases I have used, mainly due to the need to master the procedure language to carry out fundamental tasks. If you are in the market for a database at this price Micro-Maggar is more powerful than the similarly priced Printfile (Precision), but that has the advantage of linking to the

excellent Franklin II spreadsheet, whereas Micro-Magics is clearly a stand-alone. For one of us it would suggest a look at the newly announced SuperCalc Standard, running the same as Micro-Magics, and upgradable to SuperCalc in the Full SuperCalc version. If you're prepared to put the time in to master it, Micro-Magics offers a lot of facilities for your money.

Pop-up

The final product of the lot is the spreadsheet MICROSOFT QBasic (QBasic disk or cassette). This has the same "pop-up" menu system as Micro-Magics, and once again I found that to be a mixed blessing. The facilities provided are reasonably good for a Commodore 64 spreadsheet, for the price they are fantastic!

The manual was clear and easy to follow, and included on the disk are some useful "examples" — these should help out with titles and formulas in place for your tax return, and figures — covering Home Budget, Car Costs, Loans and Expenses. These allow you to get the hang of using a spreadsheet very quickly and should give beginners some useful ideas for setting up their own sheets.

In fact MicroSoft is actually very similar to the spreadsheet part of VisiCalc, which is to say it very similar to Lotus 1-2-3 on the PC machines. You can move and delete rows and columns, and text and formulas within cells, vary the width of individual columns by using the cursor keys.

and use the cursor to "point" to cells when building up formulas. Around 23 mathematical functions are provided and simple bar/line graphs can be drawn on the screen. You're allowed to split your screen in a single cell, making it possible to combine text and graphs as well. The cage function is an improvement on any I have seen, with the unusual feature of "storing" a series block of cells so that you can use them in other parts of the sheet, by simply recalling that name. There is even a programming facility where you can set up a series of steps to be carried out automatically. The speed of calculation, cursor movement and so on are very impressive Franklin II.

Outstanding

This product is so outstanding in so many ways, that I feel really sorry to point out what was in my single, strong drawback. Remember the pop-up menus, which make it so easy for beginners to use MicroSoft? Other spreadsheets which are similar menus allow an alternative "dropdown" instead of using buttons, similar to the "classic" command structure favoured by the very best spreadsheets VisiCalc, With MicroSoft there is an alternative to those menus, and the better you get, the more they allow you to do. I will illustrate this with an example, entering an additional column. On a spreadsheet using the classic command structure, this involves just three

keystrokes: / I C (Command, Insert, column). MicroSoft requires as fewer than twelve keystrokes to do exactly the same thing: F5 F7 F7 F5 F7 F7 F5 F5 F5 F5! This takes you through the menu, command, selection and insert, selects the choice and requires you to the sheet - if only the alternative command structure were available the problem would be difficult to find! As it is, at the price, you're going to have to put up with these menus, because that's nothing else is available. My only standard recommendation on this price range has been this one, while the small-line calculation speed is comparable (it's twice as fast), but fewer functions, but uses the Power Keyset/Shift to commands.

Commands

Autoguru has tackled the amateur market head-on with products which offer outstanding features for the money. However, it is a real shame these products are all stand-alone and don't seem to stand or exchange formats with them. For me MicroWord and Micro-Text do not seem to recommend that Micro-Magics, which is hard to "get into" MicroWord is a solid, competent product and, for the money, is probably unbeatable. The rest of the lot is undoubtedly MicroSoft, which is second in every other way, I think you could probably ultimately largely forget the classic command structure. ■

Ahead of the field

Fieldmaster's inexpensive packages present the ideal opportunity for small scale users to investigate home applications

I HAVE LONG suspected that many computers are bought with programs to either maintain or do the household that look amateurish, well, for kept, but hardly professional and "things will really get organised when we get a computer". Much straight talk is then issued either trying to get a basic program written from scratch or, on dismantling the 1000 line listing that took six hours to type in, and the attempt to keep household finances on the computer is abandoned in favour of the latest game.

Organised

Packages to take the the bite out of general organisation are what it needs, but finding the right one is not easy. There have always been business programs around for the 64, more than for most other machines in fact, because of the way protection from the Commodore PC which means that the business package business machines in the UK before the advent of the IBMPC. The problem has always been the price, typically £70 to £75, the need for a disk drive to run most of them, and potential difficulty of use for the novice.

Fieldmaster has now produced a series of



packages aimed at the small scale user, whether this is the home, club or business, priced between £15.95 and £29.95 and available on disk or tape. There are no extensive packages and each one comes packed complete with a concise eight page instruction manual.

HOME ACCOUNTS (CP1-01) is a four part program which allows you to keep track of your household expenditure, income and bank account. It also has a mortgage repayment calculator and a savings calculator. One of the first features that impressed me was the clarity of the manual, even down to something as apparently simple as leading instructions. Absolute beginners would find no difficulty

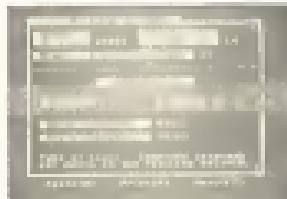
in getting the package running. Once you have loaded the program, a helpful and simple selection menu is displayed on the screen, this is a model of clarity, showing the central analysis and change work which Fieldmaster has put into these packages. The Bank Account section allows a single monthly transaction to be entered, showing a running balance, up to ten accounts. Full entries may be selected, either entirely, by completely deleting them and re-entering the correct data. A month's entries can be printed out, and saved to disk or tape.

Apparatus

In order to use **Income/Expenditure**, the next section, you must first open the bank account from memory. A series of monthly income and expenditure amounts may be kept with similar facilities to the bank account. In addition a yearly consolidation may be produced with a bar chart option. The Loan or Mortgage calculation will provide the gross or, holding back, monthly repayment required for any loan based on compound interest. Having input the usual details, amount of loan, rate of interest and period of loan, the monthly payment is



calculated and displayed. The result can be printed out, or further calculations used. The final feature, the calculator displays what looks like a hand held calculator on the screen, and allows you to use the numeric keys to perform calculations just like you would using an ordinary ten digit calculator with memory. I felt that Worksheets was a bit of a gemstone, but as a feature often offered on expensive packages, an expensive computer. The whole package performed well, given the limitations definitely built in. It is extremely easy to use, but for those with a high dependency, all this and much more could be done with a decent spreadsheet.



WORKSHEET 1.0 (\$19.95) is a spreadsheet, but not one that I found particularly inspiring. The instruction manual was quite wonderfully clear, and the start-up menu good, but the rest of the program was disappointing. As spreadsheet authors go, to organize your test data into rows and columns and then perform calculations is a 'no brainer'. You must decide how many rows and columns you need, before you start together with a menu for the sheet, you are going to work on. The format of the screen is five rows by twenty columns with fixed column widths, and the cannot be altered.

Having entered some data, this may be subsequently altered and simple calculations set up with formulas. If your calculation sheet is bigger than a single screen, the screen does not scroll-one row at a time, but jumps to a single new 'page'. Rows and columns may be inserted or deleted, the sheet may be saved on disk or tape and printed out. Worksheets will also convert a single row or column into a bar-graph. What makes Worksheets so limited is the lack of features common to other

spreadsheets. For such as mathematical functions, the ability to replicate (copy cells, move rows and columns around, or multiply) is all around the store. As quickly Worksheets replace may not be too far for a beginner to use, but I found that Worksheets was actually much more clumsy to use than some limited packages within a full-featured spreadsheet. For a similar price I would look to MUSICAL (discontinued) or TECNO-SWIFT (discontinued both of which offer much more, and to my mind are easier to use).

The next Worksheets product is a simple database called **RECORDED CARD 1.0 (\$14.95)** which allows up to 1000 records to be stored in each file. Having loaded the program the main menu is displayed from which all functions are selected. The first function, 'Setup', allows you to change your records and layout, a file name must be given and a 'cursor' (cursor) allocated to the file. This used to be a necessary code when using and Worksheets has never announced it is system mainly intended for home use — it applies immediately to all the Worksheets range. It loaded at — this only way round it is to use the same, easily remembered number for all files.

Performed

The record card layout is partially programmed into a maximum of twenty 'fields' or different pieces of information arranged in rows on the screen. These are entered for each separate field you want to use and the length — how many letters or numbers you want to use and the length — how many letters or numbers you want to place. Field — set by using the cursor keys. If you don't need all twenty fields open area can be deleted. It pays to be very careful during this operation, because mistakes cannot be easily rectified, the whole design has to be started again. Information can then be added to the file and the file saved on disk or tape. Individual records may be selected by pressing through all the cards, requesting a long record number, or selecting the one row which appears on a card. When a card is shown on the screen you can select that card to be printed later. After several cards have been extracted for printing you return to the main menu and ask for them all to be printed.

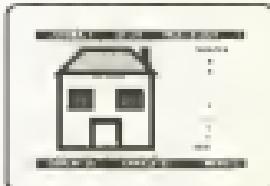
Alternatively, every record may be

printed. It is possible to set the whole file on a single field, and individual records can be changed or deleted. As all records are held in memory it is easy to move for a certain systematic selection, or unselectively, using, for sorting and subgroups. No complications following deletion is pretty slow. Overall the package is rather let down by the limit of 100 records, although you could store them and use a card if they were short, but this would limit your ability to select and sort. In the same price bracket DBMS (Datalogic) is more powerful, holding up to 200 records in memory and has a linked and labels feature.

Labels

The **MAIL LABEL** program from Pard master (£29.95) is completely separate and cannot read the data from RECORDS. Operation is almost identical, but there are some additional features. It is possible to use this program as a subroutine, each entry being treated either as a file or up to 200 entries can be kept in memory as a single file. By using 'label' files of selected report ranges may be made through a number of files on the disk version. The main purpose of the program is to print window labels and this is done by naming the records on the screen, individually selecting those you want to subsequently print and then selecting print from the main menu. This is a tedious process if you want to select say 175 out of 200 labels. It is easier to print them all and then, say, the labels you don't want. I liked very much the 'label range' of the records on the screen and the ability to print up to 200 copies of one label at a time.

PAKAWHIZARD 1.0 (\$19.95) is a word processor, but a rather unconventional one. Only one page of text 44 lines by 79 characters each can be worked on at one time, equivalent to a single page of A4. It works on the 'page formatted' principle — you type steadily in to move the page to be printed — but as you move text, the display does not scroll, but jumps sideways after 40 characters. Though clicking is possible, using the SHIFT/DELETE key, or delete from any key inserted in deleted text may be deleted on right of left justified and enhanced on right alternative headings printed. There are no menus and replace function, but it is possible by using a change function of row and column numbers, to copy portions of one row to page to another. A small file of 30 names and address records can be kept, and transferred as required into the text.



One fairly surprising feature is the facility to carry out calculations on a column held within the page using a menu choice formula which, once mastered is quite straightforward to use. This affects

For example, measures to be produced. Pages may be saved as disk or tape for future use. This is not a word processor that I would like to use for writing articles, or any long document, but this is not what it is intended for.

The final package from Fiducialsoft is located at was FIDUCIALBASIC (21.99). This allows you to design joining programs which are produced on the printer sheet at each step, and to change symbols later on little pieces of paper with the pen. The text available is upper case only, A, Z and 0-9 and has some symbols, such as the accent bar. You can use this at a time and

editing is limited to deleting a single line and re-entering it. Symbols are built up from a range of eight shapes on the screen, and surprisingly pleasing images can be produced. The finished work can be saved to disk or tape for future use. I found the best way to produce an acceptable final product was to print out the words and symbols separately, cut and paste them arranged as required on a new sheet of paper, and then photocopy the finished page. An advertisement I produced using Pageout was much altered on the screen board, and I will say off colour television!

My conclusions about the Fiducialsoft range are that they are well thought out, extremely well presented, with excellent manuals. Every package has useful examples included if you buy the disk version. The menu selection system enables to all of the products in use. A complete beginner would find most of these products very easy to use. However, I would recommend any intending purchaser to carefully consider his future needs because the capacity of all the packages is severely limited, and a comparison with some of the alternatives I have reviewed should be made. ■



Two of the best

A comparison of two of the classic spreadsheets, Practical II and VisiCalc 64 — both integrated packages offering powerful facilities

ONCE IN A while, as a reviewer of computer software, you come across a package which really stands out from the crowd. For the Commodore 64 I can think of a host of business packages which I would put into that category, the "classy" of the software world which beyond standard recommendations and, usually, box sets. To have for review two packages which are both of this quality is an unusual pleasure indeed.

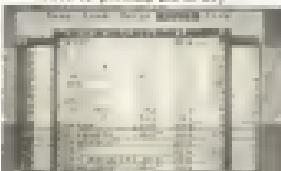
Integrated

PRACTICAL II (practical, disk 29.95) and VISICALC 64 (Visi, disk + cartridge 29.95) are £29.95 for the standard ZX version. I should say both integrated spreadsheet. That is to say, they integrate the traditional spreadsheet (rows and columns) with tables and figures can be had out and manipulated with other functions, such as word processing, graphics and database capabilities. The most famous example of such a product is LOTUS 123 which runs on the IBMPC and other business computers.

Each of the two packages has a different approach, different styles of thought of the individual. Fiducialsoft's Practical II contains an excellent spreadsheet with surprisingly useful word processing facilities, a limited database and some graphics ability. It comes with a very limited manual, which is unfortunately for the Apple version? However there is a new supplement covering the limited differences for the Commodore version, the package having been ultimately converted to take advantage of 64 features.

I found the spreadsheet easy to use, the standard structures are classic spread sheet style with the 'F1' key as the normal mode provides a single single character delete from the top-most cell. The product is fast, the speed of calculation, movement, calculation and general operations exceeded that of any spreadsheet I have used on the 64. A number of features of Practical II may be customised to suit your particular requirements during use,

and a more integrated/complex combination is possible by setting up defined formats as a configuration file which is incorporated during loading. This includes columns, private definitions and an 80 column display option! The 80 column display is produced without any additional hardware requirements, but is really a niceadresse situation as model to use it without eye strain. On my 1280 monitor I found it usable in turning the colour off, but if you're using an ordinary TV you could switch to 80 columns to prevent what colour will look like when printed. A useful context sensitive help facility displays one of five successfull calls of assistance, relevant to the operations being carried out when help is commanded to produce the list key.



Practical II allows a sheet of up to 254 rows by 100 columns with a maximum of 2000 square cells and each column width may be set individually. A total of 30 mathematical functions are provided. The ability to search and sort on any column, together with the clever facility to 'stack' columns as optional output, makes Practical II a very usable small database system. For example, four columns representing name, address, postcode and , can be listed one after the other in produce mailing labels by using the records, which are represented by single rows on the sheet, and then placing just a portion of the sheet it is possible to take certain records for output.

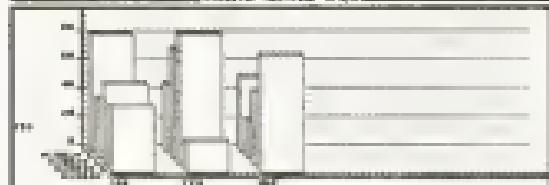
These limited database facilities can be extended by fitting up with Practical's dedicated database package PRACTITLE. It is possible to save partial sheets to disk as well as complete one and sheets may be

readied from disk "as they" in any position. Any number of similar sheets may be created from disk, one on top of another, and Practical II reads the fields which are subsequently. Thus a consolidation of several spreadsheets could be produced.

The use of operations of Practical II is much enhanced by the ability to "print" to cell references when entering formulas, by moving the cursor around the screen. Full row and column selection and deletion is available and titles may be fixed both horizontally and vertically. Replication (copying) is extremely important if you are going to build up complex sheets quickly, and Practical II provides a most comprehensive facility. Not only can you copy and repeat data at cells, rows or columns or blocks but you can also selectively erase either values or formulas which makes the creation of block "templates" very easy. Once you have set up your template, you can then, "select this months sales" or "last years sales", allowing previous values than the original entries to use the sheet with ease. The required data is entered following the prompt, Practical II copies the value in the correct cell and sets the next prompt. When all the prompts have been answered the spreadsheet is calculated according to the formulas set up by the author.

Bar charts

The graphical abilities are limited to horizontal bar charts which can be line or, with a set of + or - signs for each end of value, or bar - which shows solid bars. Lines or boxes can be drawn using any keyboard character, and by combining the function with single character width columns, your chart layouts can be created flexibly. Both upper and lower case letters can be used (the original Practical only offered upper case), but amazingly lower case has to be displayed using the CAPSHIFT after carrying out certain operations which return you to upper case display.



The final main feature of Pracsoft II is a built-in multi-lingual processor. Text can be input from a single cell across the screen up to a pre-determined number of characters with full word-wrap facilities. This means that words are not split at the end of a line, but are moved to the beginning of the next line. Text "flows" to the leftmost cell of any row. Once text has been entered it may be edited using the user macro/insert keys, but a key can also be "hot" at any point to allow linear insertion of text to be added. Text can subsequently be re-formatted or deleted but length "locked" or split justified. An unusual feature allows a single cell to be deleted, clearing up the text around it, without disturbing other cells shown on the same row of the spreadsheet. It is also possible to copy a single cell to a similar location. While the word processing facilities are not as comprehensive as a dedicated word processor, I found them adequate for a wide range of tasks, particularly when combined with the several spreadsheet commands such as "search". There is one area where Pracsoft II actually beats out a traditional word processor, the ability to produce output to a printer on small inclusion forms — like a magazine.

Spreadsheets

The features I have mentioned, on their own facilitate the overall use of text, the need of calculations together with the ability to combine these processed text, calculated tables and simple graphs in a single sheet, make Pracsoft II one of the best pieces of software I have seen for the Commodore 64. To sum for many applications, this is the single package which will process everything you need.

Yessar integrates a full featured spreadsheet, a powerful database and graphics facilities all supported by a simple provided programming language. There are two versions available, both provided no disk with an accompanying cartridge. The more expensive XL version I used allows more data to be held and has additional graphics facilities. It is not to say that Yessar has taken market review comments seriously, and the revised manual provided a model of clarity, with an excellent index. There is also a complete tutorial and a useful quick reference card as well as demonstrations and examples provided on the disk.

All the functions of Yessar are accessed from within the spreadsheet, which operates from a full-featured menu command system displayed across the top of the screen. The control key is the Shift key and the space bar then moves through the menus and returns a prompt. After you move through the primary menu the relevant

secondary choices appear underneath. Once you have selected a menu command (say — such as SEARCH/INSERT EDIT) — the cell will be recentered and easily revised and another sequence starting with SEARCH is used.

Functions

The database section of Yessar allows 64 fields per record and up to 1000 records with 1000 records per file and up to 10 million in a database. This would seem more than adequate for most applications. To set up a database you first define your record layout, and Yessar makes this easy to do and allows quite alternative formats to be established on the screen. Data can then be added, either by typing it in, or by importing data from another database. I managed to bring data from Superbase, with no difficulty. Once the database is set up records may be inserted in a number of ways, selected, sorted, deleted or changed. Selected fields from several records may be transferred from the database to within the spreadsheet area. All functions of Yessar may be automated using the special Yessar "script" language. This may sound daunting, but it isn't, because the script language is just a sequence of normal Yessar commands linked into a column of cells. Pressing F1 will show every cell in the sequence. In addition to the normal commands there are some additional new commands, for example to set up "loop" or to "branch" on the result of a conditional test. These facilities allow you to set up a system for another person to use.

Alternatively, it is possible to just set the first lines of commands in sequence in an easy plan spreadsheet. All the normal functions are provided, over 20 standard mathematical functions, three different rows and columns, move, copy, format, fill and so on. The width of the cells may be changed. A useful "size" function is provided which allows a range of reference lines (days, months and years) to be carried out. I liked the way individual column widths can be varied by dynamically moving them on the screen using the cursor keys.

With writing formulae you can "point" to cells, but the point facility has to be turned back on using the F1 key every time a cell reference is made in the formula. Up to nine "windows" of different views of the system may be available at one time, their size controlled by the cursor keys. The movement of the cursor from one cell to another can be pre-determined by programming it to skip to the next empty or "unprotected" cell. Cells can individually be protected to prevent data being changed or edited, but I found this did not prevent you "blinking" a

protected cell.

The maximum size of the worksheet is 64,000 cells with the XL2 version allowing 40% more use open cells than necessary. Virtually all features are supported, and the printing facilities provided are most comprehensive. In addition to the usual ability to print a complete cell, you can add page numbers, header and footer like on a word processor. Screen designs may be sent to the printer at any time. Yessar does not really have any word processing facilities built in, other than allowing simple editing of text and allowing text exceeding the cell height to "spill over" into blank adjacent cells. However, text may be imported from most popular word processors and merged with the sheet. I found this facility to work well with EasyScript, but when using Yessar the results were even better because the imported text is automatically formatted within the current defined print page width.

Part of the standard Yessar package is a graphics facility which allows several bar charts or line graphs to be shown within the standard sheet. These are easier to use than the graphical facilities of most spreadsheets. However with the XL2 version come a number of additional graphics, not provided. These take the form of "template picture" — a preader disk with up to twelve different coloured squares and "multiplier" graphs. Multiplier graphs show four different rows of figures as coloured bars, looking rather like the 3D view of the New York skyline. Each of these additional graphs are shown on a separate screen called up from the spreadsheet, and a screen change or key-in is possible as descriptive pointers, even in colour if you have a MCS 65 printer.

To sum up, Yessar is very, very impressive indeed. It is difficult to find more than skipping criticism, particularly once the manual is fully absorbed.

Shortcuts

How can I possibly make a comparison between Pracsoft II and Yessar, as they are both such outstanding programs? Bearing in mind the price difference, I'm not even going to try, such has its own strengths — the word processing within Pracsoft II, the database within Yessar. Either would provide a complete office system if linked with the complementary product, Formline or Yessar. The Pracsoft II is so user friendly that it has to be the ultimate Visa competitor, XL2 with Yessar/Script, which would offer a more comprehensive system.

With such software available in the, one could doubt the 64K strength of a certain home computer. ■

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Actionblob

Programs taken from Computer week in this issue for the C64 and Plus/4

10 VOL0
 20 T18="000000"
 30 SCLOUR COLOR 1,0,0
 40 COLOR 0,6,7
 50 COLOR 1,7,1
 60 GRAPHIC04,1
 70 FOR A=7 TO 13 STEP 2
 80 FOR B=1 TO 17
 90 FB=""
 100 BB="0"
 110 CHRP 1,A,B,RF
 120 NEXT B
 130 CHRP 1,B,B,RF
 140 NEXT B
 150 H=6 V=9
 160 CHRP 1,H,V,BF

170 CHRP =26 TO 32 STEP 2
 180 POP B= 1 TO 17
 190 CHRP 1,A,B,RF
 200 NEXT B
 210 CHRP 1,B,B,RF
 220 NEXT A
 230 REM END OF VISUAL DISPLAY
 240 HL=INT(2+16*RFND(0))
 250 CHRP 0,7,HL,RF
 260 H2 =INT(2+16*RFND(0))
 270 CHRP 0,9,H2,RF
 280 H3=INT(2+16*RFND(0))
 290 CHRP 0,11,H3,RF
 300 H4=INT(2+16*RFND(0))
 310 CHRP 0,11,H4,RF
 320 G1=INT(2+16*RFND(0))

330 CHRP 0,26,61,RF
 340 G2=INT(2+16*RFND(0))
 350 CHRP 0,28,62,RF
 360 G3=INT(2+16*RFND(0))
 370 CHRP 0,38,63,RF
 380 G4=INT(2+16*RFND(0))
 390 CHRP 0,32,64,RF
 400 SOUND 2,999,2,GETCH
 410 COLOR 4,6,6,CHRP,B,V,RF
 420 IF CH="0"THEN V=1,CHAR 1,X,V,RF
 430 IF CH="2"THEN V=V+1,CHAR 1,X,V,RF
 440 IF CH="P"AND X=6 AND Y=11 THEN X=X+2,CHAR 1,X,V,RF
 450 IF CH="P"AND X=9 AND Y=12 THEN X=X+2,CHAR 1,X,V,RF
 460 IF CH="P"AND X=12 AND Y=11 THEN X=X+2,CHAR 1,X,V,RF
 470 IF CH="P"AND X=12 AND Y=12 THEN X=X+2,CHAR 1,X,V,RF
 480 IF CH="P"AND X=14 THEN X=X+2,CHAR 1,X,V,BF
 490 IF CH="P"AND X=25 AND Y=61 THEN X=X+2,CHAR 1,X,V,RF
 500 IF CH="P"AND X=27 AND Y=62 THEN X=X+2,CHAR 1,X,V,RF
 510 IF CH="P"AND X=29 AND Y=63 THEN X=X+2,CHAR 1,X,V,RF
 520 IF CH="P"AND X=31 AND Y=64 THEN X=X+2,CHAR 1,X,V,RF
 530 IF T18="000000"AND X=33 THEN 560
 540 IF T18="000000"AND X=33 THEN 560
 550 IF CH="1" THEN 480
 560 GRAPHIC0CLR
 570 PRINT"SORRY, YOU'RE OUT OF TIME"
 580 END
 590 GRAPHIC0CLR
 600 PRINT" CONGRATULATIONS YOU MADE IT"
 610 END

Send us your Commodore programs, including a cassette — ideally printed on plain white paper if possible. Each listing must be accompanied by a typewritten introduction describing the program and explaining how it is constructed. We pay £4.00 for each program listing published. We cannot guarantee to return every program submitted, so please keep a copy. If you want us to return your listing you must include a stamped, addressed envelope. If you have any problems with the programs, please write to the appropriate author, Software File, Commodore Horizons, 13-15 Little Newport Street, London WC2E 9AU.

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SLOW QUICK SLOW

John Cockayne looks at tape, disk, and the other options in between

THEY'RE NO doubts about it, the C64's cassette recorder is delivered by Commodore as a slow beast. You can claim reliability until the cows come home, but that will not impress anyone at these days of cartridge-loaders and Winchester drives. But what can you do about it?

Commodore's answer is to get a floppy disk drive, which gives you a pretence of speed at typically 4-7 times that of the cassette, and additional facilities for storage and accounting data. But there are a couple of other options which may offer much better value for money, according to your particular requirements. You can greatly increase the speed of cassette operations using special software. This is cheap and leaves very little in terms of reliability. A slow alternative is now available in the form of a high speed tape cartridge system developed by Eurotronic, also American and distributed by Andromeda. This is intended as a sort of half-way house between cassette and disk in terms of cost and performance.

Reliability

You shall look at each option in some detail, making comparisons and pointing out the strengths and weaknesses of each. One of the basic issues of comparison will be the time taken to load a basic program using each of the options. The time taken is measured from computer switch-on to the end of the loading cycle.

To refresh your memory, the commands which can be used with the C64 cassette unit to control the storage of programs are **SAVE**, **LOAD**, and **VERIFY**. **VERIFY** is provided as a test to check the correct saving of valuable program but is rarely used in practice because of the high reliability of the C64 tape. In addition to programs, general data (text and numerical) can be stored in Sequential files. These require the use of the commands **OPEN** and **CLOSE**. Data is transferred typically using **GET**-, **INPUT**-, **PRINT**-, or **PUT**. For many operations a 1024 byte section of RAM is used as a buffer, thus when saving data to cassette for example data is moved to the buffer and only when the buffer is full is data sent to the recorder in 1024 byte blocks. This two-stage process has been adopted, among other reasons, because otherwise much time would be needed for the cassette module to reach a constant speed before data can be saved. Programs do not normally practice or request data in a steady stream, the data is required to start bursts. The buffer therefore has to be cleared and smaller burst chunks of data can be handled by the cassette module. It also tends to slow things down, however, even the fast parts of program storage which gives the program writer plus a couple of bytes of data, requires a full 1024 bytes of tape storage, the header block.

A typical design decision has been taken by Commodore which has a major effect on the speed of operation of the C64 cassette. All data is saved over (including that 1024 byte header block). This is intended to allow the automated correction of any errors that occur during tape reading. But a further safety net is provided by Commodore by including a number of check-sums and bytes with the stored data. This adds nearly 50 percent to the quantity of data stored. All this is in addition to an overhead by Commodore stored the C64 in any case quite a sizable price of hardware.

This leads us to considerations of a number of ways (or no ways) to speed things up. In the simplest modifying the save and load procedures to get rid of the double save and use of the multiple error trapping processes will considerably reduce the load-time times. But just how far can we go and what will happen to reliability? The answer seems to be that an increase in the speed of loading programs of up to six times is currently being achieved without causing serious reliability problems. However, the manufacturer tends to be concerned at copyright. This only Sequential data file

remains a problem if you want to keep the amount of tape used to a minimum. If you allow full software control of the tape unit then this will take most of the time and there is little you can do about this unless you're developing clarity like setting up much larger input and output buffers. Don't forget that the fast-loader software must itself be loaded from tape and this takes time. For the 114 example program used, the improvement reduced to around 1.5 times the standard cassette load when calculating the time to load the fast-loader.

Fast-loader

Many producers of commercial software have recognised the value of fast-loader programs and incorporate them into their own games. Of course there is another benefit for the commercial developer, you can more easily build in anti-copy systems if you control the way that data is stored on tape. For most users the fast-loader programs may be of great use but it is up to you fully to know the subtleties of a particular product before purchasing all your software. There is a mixture of between good and terrible in the loader, so use necessarily the most appropriate.

The only solution has been to have the fast disk professionally set up using an oscilloscope. Fortunately there's no longer necessary, since Eurotronic's Micro's **Autostore Head Alignment Tape** allows you to make the adjustments yourself.

The fast option (18.99, and consists of a software control, handbook, powerline, screwdriver and calibration power. To align the head correctly you first load the software as tape (and if that won't load, then load C64 in a really bad way). The handbook is inserted into the adjustment hole above the PLAY button, and the head is adjusted until you hear an audio signal and an on screen message starts.

The head alignment is adjusted first to the left, then to the right, to find the central position beyond which the signal from the tape will not load. Putting the head into perfect alignment is a simple matter of adjusting it until it is half way between the two positions, at which point the on screen counter should run up to 1000 within one floppy.

As a final test there's a 2000 load point, Band 0, on the Band 0 of the tape, and considering that it's chosen in for this it's not a bad little game at all.

If you are happy to rely on the C64 as your tape data storage hardware, then the **Autostore Head Alignment Tape** should give you a lot of headaches — you'll probably be surprised to find how many "fudgy" fast-load cassette tape by made to work perfectly with the aid of this invaluable package. ■



USING A Commodore C64 cassette as the most common way of saving programs. But it's notoriously slow, and to get over the problems of loading commercial software at an acceptable speed, most programs now put their loaders such as **Parcival or **Turbo** on their tapes.**

The problem is that the C64 is set up with sufficient accuracy to make sure that it has no problems loading software at 2000 bytes per second. But commercial cassette tapes with 2000 baud signals, resulting in tape loading difficulties. One known

improved speed with no loss in reliability at the cost of £1000, and with their new Fast Data Drive tape cartridge system the cartridges are called *water*. The drive plugs into the cartridge port on the computer and is intended to replace the C2N unit for most operations. An expansion port is provided on the Data Drive, and thus the C2N can be used at the same time in order to transfer programs or data. A typical transfer, at load/store rate of 4.5 to 7 times that of the C2N is provided and it is an additional £1000 extra with the system software. The extra time is taken to load the system software and this reduces the overall advantage to 3 to 4 times the C2N.

Format

Included are commands to format new drives (you have to do this with new drives and discs to make sure that data stored in an orderly manner), to read the contents of a water, to copy the water holding the system software, and to copy software between cartridges, water, and disc. The copy software will be important to avoid use of a transfer software automatically from one cartridge drive to the water system. The only problem is that the system software resides in RAM rather than ROM and that this RAM card is often required for running programs. Thus, most commercial programs, and maybe some of your own, will load onto the water but may not run from them.

your own programs, which I use it is the major use for the Data Drive.

On the other's disk drives for home computing are the 1541. It uses real basic programs and data as stored in tapes at the speed of the C2N cartridge. In addition, several new file types are provided by the disk system including User File, user ready, a new file type as User File, and technical. It is a file name in Sequential files, which is very similar to program West, Archive files, which are a modified form of Sequential file allowing you to access individual areas of data, and Random files. This last file type is something of a mystery because rather than offering the full random access that is available under many business disk-operating systems (DOS), the 1541 Random files are really a means to access data directly on a disk and thus bypass much of the disk system software. The user must keep track of what is where in the file and control the read/write process in a step by step manner.



has to your system not taken advantage of the developments. There has been an improvement in reliability but little else has changed. Commodore's serial port is used for communications with the disk drive and this creates a bottleneck in the system. The recently announced 1571 the drive has the potential to transfer data around 10 times as quickly as the 1541, but only when backed up to the new C128 computer. When plugged into a VIC 20 or C64 the data transfer rate of the 1571 is the same as for the 1541, so don't hold your breath waiting for an improvement there.

In conclusion then, if you are in search of speed, the cheapest option is to keep the C2N cartridge system but add fast-loader software. This is also the least versatile solution, and may demand that you will have to spend some time getting to know the ins and outs of a particular package before you can get the most advantage from the potential increase in data transfer rate. The Ensign Data Drive offers high speed with (almost) the simplicity of the cartridge system, but watch out for memory limitations and do not think of this as a cheap disk system. Finally consider the 1541 disk drive. This gives a significant increase in data transfer speed and in storage capabilities. You will still become annoyed at the time taken to load some software, and there is a question mark over some aspects of reliability. If this the disk drive suits that enough in most situations but have representatives the occasional loss of programs and have found that some commercial programs will not load then best.

All in all, it's not an easy choice.

COMPARING THE ALTERNATIVES

OPERATION

TYPICAL TIME TAKEN (including typing names etc.)

Load 1541 program from C2N	21.5 seconds
Load fast loader from water	10 seconds
Fast-load 1541 program	1.5 seconds
Load fast loader 1541 program	1.5 seconds
Load Ensign system software	10 seconds
Load 1541 program from water	10 seconds
Load system plus 1541 program	1.5 seconds
Load 1541 program from 1541 disc-drive	40 seconds

With the Ensign drives you can work with your own programs and data sets as if you were using a cartridge system but at a much increased speed. In the mode of use the Data Drive offers some advantages over the C2N plus this loader although it is considerably more expensive. Another good point is that you can load any program from a water. You do not have to load a lot of system specific programs, use the system and automatically and quickly switch through a water unit and then the required program. No more switching about with tape loaders and the forward buttons. All is all though, my feeling is that the Ensign Data Drive could generate a lot more. There seems little need to derive so much of the computer RAM in software to control the Data Drive, when the facilities provided do not anything like the capabilities of a disk drive. For example, although the tape-waters provide the means to store data you cannot access memory files without blanking the whole water. This would be very frustrating when using the water as user development version of

No new commands are required in order to use the disk drive. Extension of the 1541 command provides the means to specify the type of file required, whilst a special channel is used to send commands to the drive itself. Commodore have given the drive its own intelligence (I think the right word) so that the computer does not need to provide the complexity of a full DOS on-board. The 1541 contains a 6802 microprocessor, two 6502 interface chips, 32 of RAM, and 16K of ROM. Thus the 1541 is really a combination of the disk drive hardware and a general purpose microcomputer. The main, or basic, computer tasks require for disk storage are related and the drive interprets these and organises for itself the location of data on the disk.

The 1541 disk drive is, by today's standards, very bulky, slow, and unreliable. However, the 1541 has been around for a long time and has done its customer and its potential good value for money. Technology has been moving ahead rapidly in the disk business and the 1541

Hardware: C2N Cartridge

Price: £99
Manufacturer: Commodore
Software: Cartridge fast-loader
Random access memory: 16K
Processor: 6502

Hardware: Ensign Quick Data Drive

Price: £129
Manufacturer: Ensign
Processor: 6502, 6505
Random access memory: 16K

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- Integral Commodore interface for parallel printer option
- Professionally written, easy to use manual
- Help readily available from Help Disk
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Micro Macpie would be excellent value if you bought it in the applications alone. However, this highly sophisticated Macpie has been built up and running with many changes, and you can see the real value in features of Micro Macpie's potential. Once you start using your own custom applications, you will begin to discover why Commodore User magazine's sales team Macpie the software 'Budget of the year'!

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With the Epson RX80 + Comprint from Microware, you can print from your Commodore 64.

PLUS

Print graphics and documents from your Commodore 64 with the Epson RX80 + Comprint from Microware.

If you're after a ready high quality printer with your 64 or VIC 20, you'll know the problems of interfacing which can often commandeer your 64's power make life easy, but isn't always compatible or speed and quality.

Now you have the chance to get the best of both worlds, with a brand new Epson RX80 printer and a Comprint interface from Micro Control Systems.

The Comprint circuit board fits easily inside the Epson, with a connecting ribbon to the serial port. The Comprint makes the more than that it's working with a Commodore printer, and all the special features can be used — graphics and formatting commands can be used without any incompatible problems.

The Comprint requires no driver software, and leaves the cartridge slot free. What's more, it provides a 2K buffer.

The Epson RX80 runs at around £229, and offers the speed and quality common to Epson machines, plus features such as the ability to use 12 inch paper, print out 1 page, one condensed and expanded print and so on.

The first 100 customers will receive the £229 Epson RX80 and the £80 Comprint interface.

The first 50 customers will receive a Comprint plus a £20 allowance towards buying the rest of any Epson printer from Chromatics or 48, Tuxford Road, Ilford, London, N19. Chromatics' offices in Archway and Maxwell Hill offer sales, maintenance, support and training for a wide range of Commodore, Epson and other products, as well as being a mail order source for the Comprint interface.

All you have to do is wait as to put in order of more the Return of the Comprint/Epson system. For instance, if you think that "Never cartridge port fail" is more important than mark your order 1/2, and so on through 0/0.

When you've done that complete the order form on an aged and original instance of 12 or less, "Comprint and Epson form is missing from instance" —

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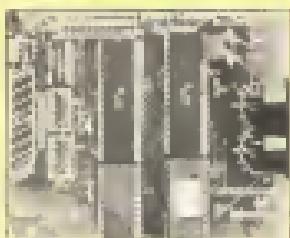
B: Epson printer quality.

C: Leaves one serial port free.

D: Compatible with most printers.

E: 2K buffer.

F: 12 inch paper.



Post your entry on a POSTCARD and send it to Comprint Contest, Commodore Horizons, 12/13 Little Newport Street, London, WC2R 1WC. IPP, to arrive by the last working day of May. Results will be announced on the July issue. Normal competition rules apply ■

THE WINNER of the DTP contest in the March issue is B. C. Hobbs of Warrington. The prize is a Ferguson 54/55 colour TV/monitor from DSI.

THE WINNERS of the Digital Photography Photo Print contest in the March issue are Oliver Wood, Worley, J. P. George, Bishop's Stortford, R. Palmer, Wallford, F. Leslie Bannister, St Chadsbury, Evesham, J. Heath, London, D. Morris, Sandhurst, P. Stannett, Cirencester, M. P. C. Ward, Hampshire, D. Townsend, Chelmsford, J. P. Dore, Tendring, M. A. Cooper, Hemel Hempstead, B. C. Hobbs, Warrington, M. H. B. Duthie, Kew, A. G. Smith, Buntingford, P. Munn, Trowbridge, P. Wood, Buntingford, P. Dore, Shirehampton, Bristol, Bristol. Each will receive a copy of the combat digital magazine *Digital Photography*.



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NEW GENERATION The Rapids game on the 64 has introduced thousands of new owners to the pleasure of paddling about in boats. It's an exciting experience in which you have to control your canoe through a slalom course, passing through the gates and avoiding the banks, passing obstacles and leaping between them. Points are given up if you touch a gate, and all the skill of real canoeing is required in the physically-challenged section.

Now New Generation is giving you the opportunity to experience the real thing, with a canoeing holiday at the Folkestone Activity Holiday Centre. The Centre, at Folkestone in Kent, has ten years' experience offering activity holidays, especially for younger children, families and school groups.

The six night holiday, which would cost £100, includes a barrel of canoe instruction from British Canoe Union canoe instructors, plus additional supervised use of canoes, single kayak hire, and canoeing skills plus a session from the Centre's beach cricket.



The Centre has a full range of catering and entertainment facilities, and comfortable accommodation.

The winner's canoeing holiday can be arranged at any date in accordance with the Centre.

As a bonus, the winner will receive a copy of the New Generation game Shoot the Rapids, and 10 runners-up will get £10.00. Shoot the Rapids or Cliff Hanger.

Cliff Hanger, the exciting card-based strategy game.

To enter, all you have to do is look at the cards A and B, and spot the differences between the two. You don't have to mark them all, just count up the number of differences and put the number on a POSTCARD (or the back of a sealed envelope). Then complete the following in an apt, amusing and original sentence in 12 words or fewer, "I would like to play the rapids because..." Then tell us whether, in the event of your winning a runner-up prize, you would rather have a copy of Shoot the Rapids or Cliff Hanger. Add your name and address.

No post entry should include:
The number of differences in the sentence
Your full address
Your choice of runner-up prize
Your name and address.

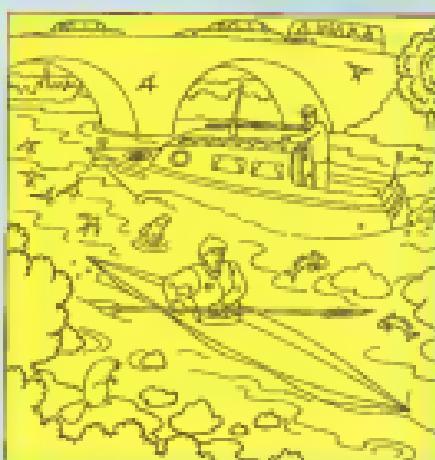
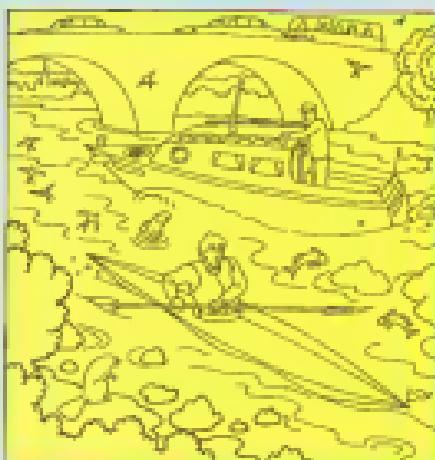
Send your entry to Shoot the Rapids Centre, Cuckooles, Hastings, TN13 1LP, Little Newport Street, London, WC1H 9TF, to arrive by the last working day of May. Winners will be announced in the July issue. Normal competition rules apply.

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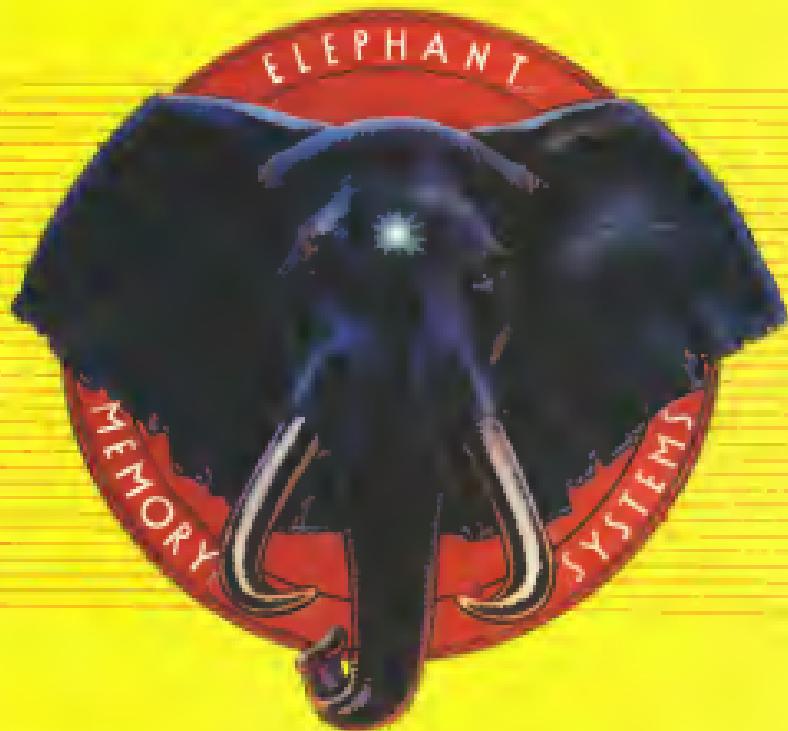
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